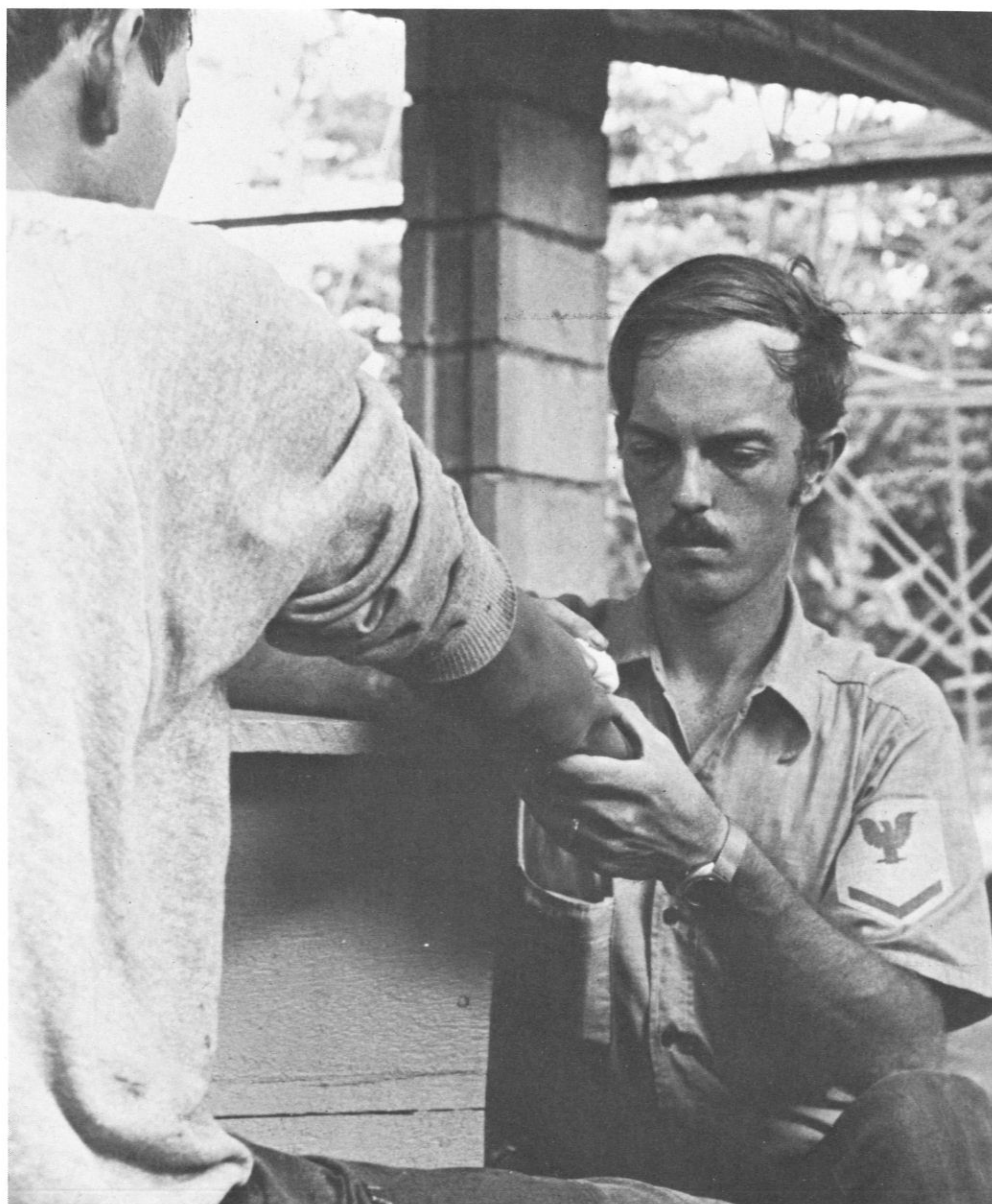




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**Credits:** All pictures are Official Navy Photographs unless otherwise indicated.

**COVER:** As a member of the U.S.-Republic of the Philippines civic action team, HM3 Larry Jackson continues the Hospital Corps tradition of delivering health care wherever needed. (Photo by JO1 Mike McGougan.)

The continued support of the Media Division, Educational Programs Development Dept., Health Sciences Education & Training Command (HSETC), NNMC, Bethesda, Md., is gratefully acknowledged.



HMCS George E. Smith, USN, administrative assistant to the Inspector General, Medical is re-enlisted by VADM D.L. Custis, Navy Surgeon General. Mrs. Dorothy Smith participates in the ceremony.

## from the Chief

The 17th of June 1975 marks the 77th anniversary of the Hospital Corps of the United States Navy. Subsequently, an Act of Congress approved on 29 August 1916 granted the Navy Hospital Corps a strength of 3.5% of the authorized enlisted strength of the regular Navy and Marine Corps. At the same time, it was provided a more complete rating structure that matched the structure of other enlisted ratings. After 59 years we are still limited to the same percentage.

Just what does this mean relative to our efforts to deliver health care?

When the statutory limit was enacted, the Navy Medical Department was not responsible for the health care of dependents and retired personnel. Yet with increased patient volume and the many technological additions to health care, we are still saddled with this archaic ceiling. Neither the Army nor Air Force is so limited. They are free to staff their medical enlisted ranks in accordance with the requirements of good medical practice, workload, and fair share of the total end strength assigned their respective services.

During war and in other emergencies the limited percentage has been suspended by Congress and we have always managed to meet our commitments. However, we now face the problem of an ever decreasing defense manpower which diminishes our numbers and provokes this dilemma: To be true to the demands of our discipline, we must improve the level and sophistication of our health care delivery while continually reducing our personnel assets.

The statutory limit in Title 10, U.S. Code, is before Congress for repeal. Even with repeal we still face the monumental task of increasing our share of assets within the overall end strength allotted to the Department of Defense. Until then we must carry out our mission in a resourceful manner.

The unselfish devotion to ideals not always exacted of others is part of our lifestyle. During a total career, danger will often be a companion.



Study for increased knowledge and ability must be a constant endeavor. Time away from home and family is also part of the job. There must be willingness to accept responsibility and hardship. We require strong, self-reliant, resourceful men and women, proud of their heritage, their jobs, and their contributions.

Although short in numbers, the Navy Hospital Corps has always been long in quality because its members constantly have sought to recognize their strength and weakness and to improve their performance. Appreciation of the meaning and necessity for military organization and discipline is imperative. The traditions, mission, and objectives of our organization must be understood. Leadership by strong, intelligent petty officers is the backbone of the Corps, and every individual that puts a "crow" on his arm must be prepared to measure up to all requirements. We cannot afford to carry those persons who shun responsibility, who are inept, who have hazy concepts of what is right or wrong and, above all, who are not willing to sacrifice themselves for the good of our patients. The influence of the nonperformer can be devastating in combat situations, in hospital wards, and in isolated stations. The people we serve deserve the best we can provide. Ability, integrity, loyalty, and courage have always been the attributes of our Hospital Corps personnel. Guard them well.

The following excerpt taken from Secretary of the Navy James Forrestal's "well done" commendation to the Hospital Corps, delivered in 1945, has been quoted many times. It best describes the tradition of the Hospital Corps and is worth repeating:

Hospital corpsmen saved lives on all the beaches that the Marines stormed. Corpsmen were at the forefront of every invasion, in all the actions at sea, on all carrier decks. You were on your own in submarines and the smaller ships of the fleet, performing emergency surgery at times when you had to take the fearsome responsibility of trying to save a life by heroic means or see the patient die. Your presence at every post of danger gave immeasurable confidence to your comrades under arms. Their bravery was fortified by the knowledge that you, the sailors of solace, were literally at their sides with the skill and means to stanch wounds, allay pain, and to carry them back, if need be, to safe shelter and the ministration of the finest medical talent in the world.

The Navy Medical Department is fiercely proud of its Hospital Corps. I personally am confident that your accomplishment in today's trying times will be tomorrow's finest legacy, for yours is an honorable profession of service to your Navy and your nation. Happy Birthday!



# HM3 Larry Jackson: Bringing Health Care to the Barrio

Sweat beads dotted HM3 Larry Jackson's forehead as he bent over and, with a wad of gauze, gingerly dabbed pus from the open sore on a Filipino woman's hand. Curious onlookers, most of them children, peeped through a bamboo window as Jackson tended the infection. "Now I know how a country doctor must feel," the hospital corpsman said.

With the other medical personnel of a combined United States–Republic of the Philippines civic action team, HM3 Jackson had traveled to the barrio of Unidos on the central Philippine island of Panay to provide care. The village is located some 300 miles south of Manila. Isolated from much of Philippine life, the residents of Unidos seldom see a doctor. "We had to ride in an outrigger (a "banca") through the sea to get to Unidos, and when we arrived there hundreds of people were waiting for us," Jackson said. "Many hiked for hours out of the mountains to get medical care."

## BIG WELCOME

A member of the 3rd Marine Division's Battalion Landing Team Three/Four at Camp Hansen, Okinawa, 24-year-old HM3 Jackson volunteered for the civic action team that visited Panay. When the team arrived

aboard the RPS *Surigao Del Sur*, the residents flocked to the beach to welcome them. Local volunteers helped unload the donated supplies and U.S. *Navy Handclasp* materials that the team brought with them: lumber, corrugated tin, paint, powdered soap, sporting goods, and medical and school supplies.

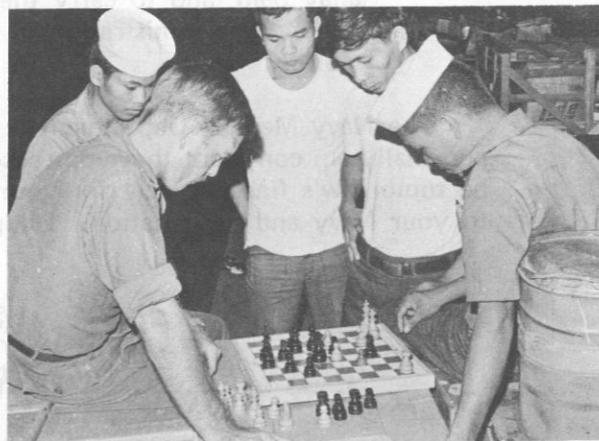
"Our people rely on coconut trees for copra, and on the sea for fish and shellcraft. Handicrafts such as woven hats and placemats are our main sources of income, so you can imagine how much this *Handclasp* effort means to us," said Mrs. Maria Carillo Zaldivar, mayor of Nabas municipality in Panay.

*Navy Handclasp* is a worldwide endeavor by the U.S. Navy to help people in foreign lands who wish to improve their living conditions. *Project Handclasp*, which comes under the umbrella of *Navy Handclasp*, is a similar worldwide endeavor by U.S. organizations, companies and concerned individuals who donate needed supplies and materials. The U.S. Navy transports these donations free to foreign countries, where they are distributed by Navy and Marine Corps personnel.

The *Handclasp* program strives for mutual understanding, respect, and good will through direct people-to-people communication between Americans like Larry Jackson and citizens like those of Nabas municipality.



HM3 Larry Jackson and Philippine Navy nurse ENS Christy Montilla, colleagues on the civic action team, prepare a bandage for a patient.



HM3 Jackson passes time on the voyage to Panay by matching wits with crewmembers of the Philippine Navy tank landing ship *Surigao Del Sur*.



Happiness is a book donated through *Project Handclasp*, and presented by HM3 Jackson.

### LIFE IN THE BARRIO

During their 12-day stay in Nabas, civic action team members became honorary residents of the community, living and working with the people of the local barrios. At Unidos, HM3 Jackson helped set up a makeshift medical treatment area in a small room adjacent to the cultural center's outdoor stage. A long line of patients, many cradling infants in their arms and holding toddlers' hands, waited in the tropical heat to receive medical attention.

Inside the treatment room there was no floor, no running water, and no electricity. But the lack of modern conveniences didn't stop HM3 Jackson. "I'm used to roughing it with the Marines," he said.

### ON HIS TOES

In May 1973, HM3 Jackson received orders to the Field Medical School at the Marine Corps Base, Camp Pendleton, California, where he studied combat first aid and learned "how to be a Marine." Later, he served as an instructor at the camp, passing on to others his medical knowledge and skills.

HM3 Jackson reported to Camp Hansen in May 1974, as one of 34 corpsmen providing health care for 1,700 Marines. He is also assigned to Battalion Landing Team Three/Four, embarked aboard the helicopter carrier USS *Tripoli*, and has participated in several amphibious landing exercises.

A native of Wharton, Texas, HM3 Jackson acquired his initial training in first aid, patient care, and laboratory procedures at the basic Hospital Corps School,

Naval Hospital San Diego, following boot camp at the Naval Training Center, Orlando, Florida. He reported to Naval Hospital Corpus Christi, Texas, in April 1972 for duty in the intensive care unit.

"I really had to be on my toes there because I helped care for very seriously ill people, patients suffering from heart attacks and stroke," HM3 Jackson said. "I often had to apply lifesaving measures. But I'm happy to say not one patient died while under my care."

At Corpus Christi, HM3 Jackson also worked in the Physical Therapy Department. "I saw how the physical therapists worked, and decided I would like to do it, too," he said. He has reenlisted for six years and hopes to attend the Navy's physical therapy school. "This way I can further my education, and have an even more interesting and rewarding career in naval medicine."

### A FAMILY TRADITION

When asked why he joined the Navy, Petty Officer Jackson replied, "I always wanted to work in medicine, and I always was interested in the Navy. I figured that I could enjoy both worlds through a career in Navy medicine."

"I must admit, family tradition also influenced my decision to enlist in the Navy," he added. "My grandfather and my brother both served in the Navy. My father is an optician at the Rugeley and Blasingame Medical Clinic in Wharton. So both the Navy and medicine are part of my background."

In Unidos, stethoscope dangling from his neck, HM3 Jackson swatted at a fly as he waited for the next patient. "It's a unique experience to help people who seldom see a doctor," he said. "It really means a lot to these people that we came to help them, even though we are limited in what we can do. And it means a lot to us to have this opportunity to serve."

"Tender, loving care. We give that out in large doses," the corpsman said.

The local people showed their appreciation for the civic action team's efforts by honoring the servicemen with dances and parties. The Filipinos are noted for their hospitality, and Nabas' residents were no exception, HM3 Jackson reported. Team members were invited into Filipino homes for meals of roasted pig, papaya, cassava root pudding, and tuba, a sweet wine derived from the coconut blossom.

With today's shortage of doctors, skilled hospital corpsmen like HM3 Larry Jackson are in great demand. The Navy boasts that it "takes care of its own," and Navymen like the corpsman from Wharton are living proof that these are not just idle words.—Story and photos by JO1 Mike McGougan, PAO, CINCPACFLT. 🇺🇸



# The Naval Health Research Center, San Diego: Prelude and Prospects

By **CDR Paul D. Nelson, MSC, USN**  
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**Naval Medical Research and**  
**Development Command**  
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By authority of the Chief of Naval Operations, effective 1 September 1974, the Navy Medical Neuropsychiatric Research Unit at San Diego was redesignated the Naval Health Research Center, with a mission to study medical and psychological aspects of health and performance among naval service personnel. The present review provides a historical abstract of the research conducted by the Navy Medical Neuropsychiatric Research Unit

during its 15 years of commissioned status, as a basis for appreciating the conceptual background of such administrative change and, perhaps, for predicting the future research orientation of the Naval Health Research Center.

In our society, human psychological adjustment to the different stresses of military service has long been a matter of interest and concern to the defense forces. As reflected by illness and



Naval Health Research Center, San Diego, California

behavioral dysfunction, psychiatric casualties have been a major cause of invaliding military personnel, at considerable cost to the service and the victim alike. To develop a better understanding of such problems and to improve methods for their prevention, the Navy Medical Neuropsychiatric Research Unit was established in 1959; for the first time an in-house research capability was provided exclusively devoted to the clinical investigation of adverse military, psychological, and psychiatric situations.

Uniquely staffed to include the disciplines of psychology, psychiatry, and neurology, the Navy Medical Neuropsychiatric Research Unit developed a research program with emphasis on (1) recruits and their first-enlistment effectiveness, (2) the epidemiology and management of psychiatric disorders, (3) adjustment to special duty environments, (4) psychophysiology and performance, and (5) life stresses and illness.

#### **First-Enlistment Effectiveness of Recruits**

At any given time, military personnel who are engaged in their first enlistment comprise a major segment of the active-duty population. The adjustment required during transition from the institutional demands of civilian society to those of the military constitutes an implicit challenge during that early period of duty. Furthermore, during their first enlistments most recruits simultaneously face the physical and psychological hurdles imposed by the maturation process from late adolescence to young adulthood. These are important factors which contribute to the high incidence of psychiatric problems known to occur in younger, first-enlistment personnel, and which influenced the choice of psychiatric screening of recruits in relation to their service adjustment as one of the first projects to be undertaken by the Navy Medical Neuropsychiatric Research Unit.

To test the efficacy of the recruit psychiatric interview (as practiced in the naval service at that time) against alternative models of screening, a field experimental design was employed with cohort samples of approximately 11,000 sailors and 12,000 Marines who were processed into active duty during 1960 and 1961, and who were followed in a longitudinal study throughout their entire first enlistment. Of the Navy recruit cohort (and to a lesser extent their peer Marines), about 25% failed to complete their first enlistment;

another 5% were not recommended for reenlistment, attributable for the most part to behavioral maladjustment in service. While such percentages are likely to vary over given periods of time, reflecting the quality of accessions, service policies, and perhaps the military posture of the times, the study demonstrated that significant costs are incurred during first enlistments as a result of inadequate adjustment by young military personnel.

For early identification of men and women who will be unable to adjust to military service, the mass psychiatric screening of recruits appeared to be less efficient than alternative models of screening that were tested during the four-year study. Furthermore, from the demographic, aptitudinal, medical, and performance histories of recruits in that study, an actuarial prediction system ("odds-for-effectiveness" tables) was developed to gauge the likelihood of adjustment during first enlistment on the basis of information available at the time of recruitment; the system is now in use and has proved to be effective.

That earlier research was of direct value to the Navy Medical Department, the Chief of Naval Personnel, and the Marine Corps Commandant in devising sound recruit-screening practices and manpower quality-control procedures for dealing with first enlistment accessions. The earlier recruit studies have now been extended to evaluate the stress impact of different occupations and duty environments that interact with the expectations, aspirations, and other personal characteristics of recruits, in order to further improve the accuracy of prediction for differential adjustment to naval service during the first enlistment.

#### **Epidemiology and Management of Psychiatric Disorders**

While the recruit studies provided substantial information about the incidence of psychiatric problems among younger naval personnel, such data could not reveal the distribution of these problems within the total naval service population. A more complete epidemiologic assessment of psychiatric disorders within the entire Navy was desired. For if the rates of psychiatric disorders were found to vary by age, occupation, duty environment, or other demographic characteristics of Navy and Marine Corps personnel, more specific hypotheses could be



tested in search of better preventive psychiatric technique.

From retrospective analysis of medical statistics, it could be determined that approximately 1 per 100 men at risk, per year, would be hospitalized with a psychiatric diagnosis, for an average period of 30 days per admission. The incidence of psychiatric hospitalization is greater for male enlisted than for officer personnel, and greater for female enlisted than male. Approximately two-thirds of all such admissions are diagnostically tagged as personality disorders, with psychoses typically accounting for less than 1% of the psychiatrically hospitalized population. Age, occupation, and duty environment were three variables observed to be differentially related to the incidence of psychiatric hospitalization; age was also related to diagnosis. Through careful analysis of more than a decade of psychiatric hospitalizations, the Navy Medical Neuropsychiatric Research Unit developed a psychiatric census data system for the naval service population which allows continuous monitoring of trends over time. The identification of particularly high risk occupations and duty environments has led to more refined study of those at risk.

High research priority was given to the management of psychiatric disorders through diagnosis, treatment, and disposition. Unlike most other illnesses or injuries from which over 90% of patients hospitalized are returned to full duty following treatment, only 40% to 50% of patients hospitalized for psychiatric problems are typically returned to full duty. From follow-up studies of personnel so returned to duty, we again find that only about 50% serve effectively without readmission to the sick list or premature discharge from service. Such outcomes prompted still further predictive studies, from which the Navy Medical Neuropsychiatric Research Unit developed prognostic guidelines based upon personal characteristics of the patient, the diagnosis, and treatment procedures, to aid psychiatrists and medical review boards in arriving at prudent decisions in disposition.

The psychiatric outpatient situation has been much more obscure. For that reason the Navy Medical Neuropsychiatric Research Unit applied the same epidemiologic techniques in analyzing samples of outpatient clinics as in studying the psychiatric inpatient population. And, during the past year, an effort has been made to go one step

further—back into the fleet or other operational environment—to better define the earliest circumstances and decision-making processes involved in initiating psychiatric referrals to outpatient or inpatient facilities. Such information will be useful in developing additional guidelines for the management of psychiatric problems at field command levels, as has already been done in the case of outpatient facilities and hospital staffs.

In recent years increased attention has been focused on the special problems of drug abuse and alcoholism, both within the armed forces and in society at large. As conducted by the Navy Medical Neuropsychiatric Research Unit, epidemiologic studies of psychiatric problems in general have provided the naval service with an immediate capability for evaluation of the incidence of drug abuse and alcoholism (identified through hospitalization or exemption program rehabilitation referrals) in relation to demographic, occupational, and duty environment variables, and for assessment of the relative effectiveness of rehabilitation programs through the follow-up study of personnel who are returned to duty after treatment. To achieve still better understanding of these problems, the Navy Medical Neuropsychiatric Research Unit initiated last year a prospective study of alcoholism in the naval population, promoting a less common and much needed type of research. Medical, cultural, and psychological issues are all being addressed in that program.

### **Adjustment to Special Duty Environments**

From its earliest years the Navy Medical Neuropsychiatric Research Unit attended to the unique psychological stresses experienced in unusual duty environments, so as to develop improved guidelines for psychiatric screening, or even for the training and management of personnel who serve in such environments. As had been previously done at the Submarine Medical Research Laboratory in the psychiatric screening of submarine personnel, the Navy Medical Neuropsychiatric Research Unit initially launched an investigation of the adjustment problems encountered by Operation Deep Freeze personnel, wherein relatively small groups of men wintered-over in virtual isolation and confinement for a period of 6 to 12 months of duty in Antarctic scientific stations. From that research psychiatric screening guidelines evolved for use not only by

the Navy, but by the National Science Foundation and other civilian agencies associated with that program.

Though isolation and confinement alone cause significant stress for most individuals, and the physical environs of Antarctic stations prove demanding in their own right, that study provided some enlightening observations of group function under stress; the study also demonstrated the importance of work and interpersonal roles in such groups, and the compatibility of personal characteristics with role and other group demands. Although there have been few, if any, major psychiatric casualties among naval personnel since the advent of formal screening for Antarctic duty, great variations in the relative ease of adjustment, and in the effectiveness of men who serve there has been observed and attributed to group factors.

Such observations were useful in the development of present guidelines for psychiatric screening; but more than that, the study served as a prototype for research to be conducted in other naval duty environments which though less unusual or exotic in character, were no less demanding in terms of interpersonal stress; ships at sea also present unique special environments. Over recent years, therefore, the Navy Medical Neuropsychiatric Research Unit has also become involved in studies of men at sea, deployed aboard ship for periods of six to nine months, both in and outside of the combat theatre. The types of ships that have been sampled in this research are identical to those identified in previous psychiatric epidemiology studies, offering duty environments of relatively high, low, or average psychiatric risk (inclusive of drug abuse and alcoholism). During the past year and in collaboration with the Office of Naval Research, the adjustment of men in 20 different ships (deployed in both the Mediterranean and Pacific Oceans) has been assessed in relation to: the medical, demographic, and attitudinal characteristics of the men; the nature of their work environments and occupational roles; and the social organizational patterns aboard ship. This effort represents one of the largest and most complex social medicine studies ever attempted. In an era during which concern for human goals and assets is so vital to all work organizations, this research should contribute significantly to a better understanding of organizational stress problems, and psychological well being, productivity, and health.



Sleep research is conducted using the computer room of the Naval Health Research Center. Electroencephalogram monitoring is accomplished on subjects who rest in quiet rooms.

### **Psychophysiology and Performance**

The Navy Medical Neuropsychiatric Research Unit did not focus interest exclusively upon the psychological and social stresses of naval service. From its inception, the Unit also addressed the neurologic and psychophysiologic characteristics of man under the work stresses of naval duty, seeking to advance understanding and predict ability in the areas of adjustment and effective work performance. A longitudinal study of seizures (not of high incidence, but of significant potential cost to the man and the service) was among the earliest neuropsychiatric studies conducted from a psychophysiologic perspective; improved diagnostic and prognostic guidelines evolved. More recently, with support from the Advanced Research Projects Agency of the Department of Defense, the Navy Medical Neuropsychiatric Research Unit has been exploring the potential for human self-regulation of central and autonomic nervous system functions in relation to performance efficiency.

Among the most significant psychophysiology research conducted at the Navy Medical Neuropsychiatric Research Unit has been the systematic and internationally recognized study of sleep loss and recovery in relation to human performance and psychologic health. The fundamental significance of this work for continuous military operations is evident: 24-hour performance



capability must be maintained, even though conditions conducive to the normal civilian pattern of work-rest-sleep schedules cannot be regularly maintained. Both the quality and quantity of sleep that follows different degrees and types of sleep deprivation have been studied in relation to human performance efficiency. Additional research has also been conducted to assess environmental effects, such as noise, on sleep behavior itself. While individual differences are recognized, though as yet poorly understood, individual patterns of sleep behavior appear sufficiently reproducible to suggest that such psychophysiologic behavior may well provide a reliable index for measuring stress effects in man.

It appears in general that sleep quantity, rather than quality, as measured through psychophysiologic stages, is the more useful enhancer of task-performance efficiency on a relatively short-term basis. The stages of sleep may assume greater importance on a relatively long-term basis, and perhaps in conjunction with accumulated sleep debts, for human health or metabolic processes. Biochemical studies of hormonal activity that can be specifically related to sleep stages tend to confirm this possibility. Assessment of sleep patterns and the longitudinal biochemical mapping of neuro-endocrine functions in physically and psychologically stressed men, demonstrated by recent studies of underwater demolition team trainees and fleet carrier jet pilots, will hopefully lead to a better understanding of fatigue, stress, performance capability, and health from a psychophysiologic point of view.

### Life Stresses and Illness

The observed changes in psychophysiologic state and biochemical patterns among individuals subjected to acute and chronic stressors of environment, covariate over time with motivational and emotional states, also stimulated further exploration of the relation between psychologic stress and physical illness. In the earlier recruit studies a disproportionately high incidence of physical illness had been observed among sailors experiencing psychiatric difficulties in recruit training, such episodes typically preceding psychiatric referral. The theoretical writing of Selye, the related empirical investigations of Levi and his Swedish colleagues, and the conceptualizations of life stress and illness

advanced in psychosomatic medicine by Hinkle, Holmes, Wolff, and Rahe further influenced naval research conducted along these lines.

To test hypotheses concerning the relation of life stresses to illness, the Navy Medical Neuropsychiatric Research Unit began several years ago to study health change and accidents among ship's crews, a vital part of the shipboard research already described. Critical incidents in individual recent life histories, major and minor changes in daily living habits or life-style patterns, and individual past medical histories, all recorded and documented prior to deployment, have been related to the incidence of illness and accidents experienced by men at sea during deployment periods. Individuals reporting a relatively high incidence of predeployment life change, in contrast to those reporting little if any change, have presented significantly higher rates of health change aboard ship. Since a large proportion (about 70%) of the illness observed is typically attributable to a much smaller proportion (about 30%) of the men at risk—a pattern observed in the recruit study and also in civilian industrial populations—this research program is expected to aid in developing predeployment medical screening guidelines for identification of individuals who represent greater than average health risks.

Much more remains to be explored: the individual differences in susceptibility to health change over near-future periods of time, the relationship between psychological stress and immunologic mechanisms, and the precipitating social and physical environmental stressors. Shipboard health studies have revealed significant variations in health change as a function of personal demographic variables, occupational group and type of work aboard ship, deployment phase and operational tempo, and predeployment stress. Secondary to research interest in life stress and illness, normative information of potential utility to the Navy Medical Department has been steadily accumulated from numerous studies of medical problem patterns observed among deployed fleet units; assimilation and analysis of such data could undoubtedly prove instructive in the future planning of fleet health care systems.

Relating the theme of life stress and illness still further to the need for data-based systems of health care, the Navy Medical Neuropsychiatric Research Unit has also established the Center for Prisoner of War Studies, allowing historical

analysis of combat stress and POW experience in relation to physical and mental health of service personnel. Army and Navy-supported health studies of recently repatriated prisoners from Southeast Asia have been designed and conducted in the interest of facilitating the best possible medical care and rehabilitation for these men and their immediate families.

Research conducted by the Navy Medical Neuropsychiatric Research Unit over the past 15 years has demonstrated empirically, and in theory, the inextricable relationship between physical/mental health and fitness for performance of duty in the naval service. The importance of epidemiologic models in the study of psychological adjustment, and of life stresses in relation to health change, has been established during the past century of medical research.

Major impetus for broadening the title and mission of the Navy Medical Neuropsychiatric Research Unit was provided by these research techniques; the present and anticipated need to further advance the state of predictive medicine for recruit populations, the fleet, and occupational health programs focused across naval service careers gave added thrust to the emergence of the Naval Health Research Center. With the recent decommissioning of the Naval Medical Research Unit No. 1 and Naval Medical Research Unit No. 4, and in the tradition of those research units, the Naval Health Research Center can be expected in the years ahead to add depth to its staff in the biological sciences of medicine, addressing even more effectively the medical and psychological aspects of health and performance in Navy and Marine Corps populations. ㊦

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## INSTITUTE ON OCCUPATIONAL HEARING LOSS

The 23rd Annual Institute on Occupational Hearing Loss will be held at Colby College, Waterville, Maine, 3-8 August 1975.

The course is planned to enable medical officers, ENT specialists, industrial hygienists, nurses, managers, and legal and safety personnel to recognize noise hazards, prevent noise-induced hearing loss, and assess workmen's compensation claims.

The course includes lectures, demonstrations, discussions, and actual laboratory practice or visits to nearby industrial installations to work with instruments for testing hearing and analyzing noise.

The curriculum is primarily concerned with prevention of hearing damage. At the completion of the program, participants will have enough experience to initiate and conduct a hearing conservation program at their activity.

This continuing medical activity is acceptable for 27 hours' credit in Category I for the Physician's Recognition Award of the American Medical Association. The course also complies with the requirements of the American Council for Certification in Hearing Conversation; individuals who pass the examinations will be eligible for accreditation by the council.

The inclusive course fee for each participant is \$242.50. The daily fee for room, board, and three meals is \$22.50. Facilities are available to accommodate families. Room and board for family members is \$22.50 a day for adults, and \$15 for children age ten and under.

A \$25 deposit for each adult and \$15 deposit for each child is required with your application. TEMADDU/TDY will be funded by each activity.

For additional information and reservations write: Robert H. Kany, Director, Division of Special Programs, Colby College, Waterville, Maine 04901.—

BUMED Code 5611 ㊦

# Duplicate Physicals End for Service Academy Applicants

The Department of Defense Medical Examination Review Board was established at the Air Force Academy in 1972 to eliminate duplicate physical testing for service academy applicants. "Although one physical examination theoretically satisfied each academy's requirements, not every academy to which a young man applied received copies of the test results," says CAPT Roger Stevenson, the Navy medical officer who is director of the board. "So the applicant was scheduled for duplicate physicals. It wasted his time, and the time of our doctors and technicians as well."

The average cost of an academy physical examination is \$150. During the board's 1973-74 testing cycle, 27,500 individuals applied for appointments; but by applying for entrance to several academies and Reserve Officer Training Corps (ROTC) programs, they increased the total number of applications by 23,000. Elimination of so many duplicate examinations saved DOD \$3,450,000.

"That figure does not represent money actually returned to the military," CAPT Stevenson says. "Instead, the medical testing teams have been freed to perform their regular duties. With fewer military physicians, this is important."

Testing cycles for the board are from June of one year to May of the next. By mid March in the current 1974-75 cycle, the board had received 30,338 individual applications. Of that number, 728 were women who had applied for admission to various ROTC programs or to the Merchant Marine Academy, the only service academy now accepting women.

The Army, Navy and Air Force academies are each represented on the board by a military physician and two enlisted medical-standards specialists from their respective services. A civilian doctor processes examinations for the Coast Guard and Merchant Marine academies; a Coast Guard warrant officer assists him with

Coast Guard applicants, while the two Navy technicians help with Merchant Marine applications.

The medical teams are supported by an administrative specialist from both the Air Force and Navy, and by 18 civilian employees.

"We don't set the physical standards, the academies do that" CAPT Stevenson explains. "The Air Force Academy, for example, has the strictest sight and height requirements. Seventy per cent of each new class must be pilot or navigator qualified."

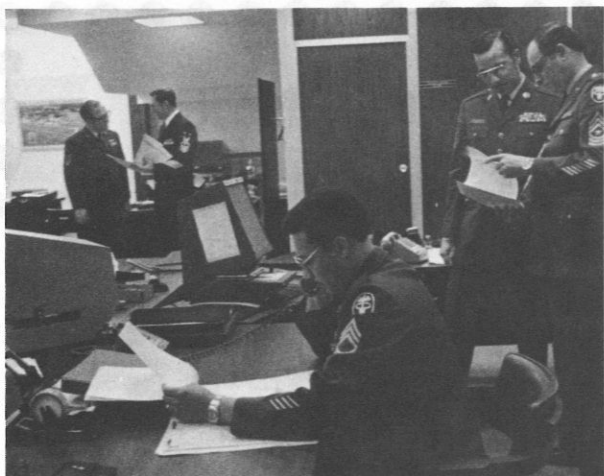
To accomplish the examinations, the board uses a network of 350 testing stations, about 40 of which are located overseas. The stations are at Reserve, Air National Guard, and active-duty military bases, and at Veterans Administration and Public Health Service hospitals.

Young men and women interested in entering a service academy pay their own transportation costs to and



Mr. Fred Wilburn and CAPT Roger Stevenson (MC), assistant director and director respectively of the DOD Medical Examination Review Board, discuss the board's operations. The board has ended duplicate physical examinations for applicants who apply to more than one of the five service academies. (Photos by MSGT J. Caldwell, USAF.)





Enlisted medical standards specialists from the Army, Navy, Air Force, and Coast Guard process results of physical examinations for service academy applicants scheduled by the Department of Defense Medical Examination Review Board.

from the testing stations. "A person may have to travel up to 150 miles to be tested," says CAPT Stevenson. "In the past, he might have had to make that trip several times."

A 32-year Navy veteran, CAPT Stevenson was one of several officers who in 1970 advocated the formation of the board. Another was COL George Kandel, the Air Force physician who served as the board's first director until his reassignment in May 1974.

The board was established in 1972 at the Air Force Academy, Colorado, as the Service Academies Central Medical Review Board. "The Air Force Academy was selected as the site for the board because it had the office space and the computer service we needed," explains CAPT Stevenson. "It's also more centrally located than the other academies on the East Coast."

Although the board works for all the military forces, the Air Force is responsible for support and policy guidance.

The directorship is one of two positions on the board which rotates among the services. The other is the board's dental officer, currently Air Force LTCOL Isadore Neurock.

Computers, vital to the board's operation, are used for everything from storing information to scheduling examination appointments at testing stations. "Information on each applicant is put into the computer when we receive a request for a physical," CAPT Stevenson says, "and is updated when we gather any new information. If we receive a question about an individual, we can retrieve his file from the computer in less than 20 seconds."

In addition to the computer storage, a folder file and a microfilm file are also maintained on each applicant. Microfilm records are kept until the applicant is no longer eligible by age for admission to a service school or reserve officer training program.

Even though a person applies directly to the board for an examination, he will not be scheduled until one of the academies has reviewed his academic records and finds he meets all other admissions requirements. All examination results are initially seen by LTCOL Neurock, who reviews some 800 records each week for dental abnormalities. After his review, LTCOL Neurock gives the records to the appropriate service medical team. The enlisted specialists then review the information; discrepancies are brought to the attention of the medical officer, who also double-checks all records.

Applicants have the right to appeal the findings of an examination. For example, a young man may indicate a previous injury on his medical history, but show no proof that the injury has been corrected. He is given the opportunity to produce evidence of correction. He can also have certain physical defects corrected to become eligible for admission to a service academy.

Although the military is the primary user of the physical examinations, the results can be made available to other schools and prospective employers with the individual's permission.

"We like to think that we are not your typical bureaucratic organization," CAPT Stevenson says. "Our philosophy is that we are solely a service organization, and we practice that in every action we take."—PAO, USAF Academy, Colorado. 🍀



Air Force LTCOL Isadore Neurock, dental officer for the DOD Medical Examination Review Board, checks the dental record of a service academy applicant. As the board's only dental officer, LTCOL Neurock reviews the medical folders of every young man and woman who applies to an academy or officer training program.

# THE HEMATOLOGISTS' CORNER

## Selected Medical Oncologic Emergencies

By LCDR Harry Long, MC, USN

and

CAPT Richard A. Burningham, MC, USN

In the treatment of patients with malignant diseases, certain clinical situations may be encountered which, while appearing insignificant, may result in rapid and catastrophic deterioration if improperly treated, or left untreated. Such conditions as thrombocytopenia, sepsis, disseminated intravascular coagulopathy, and pericardial tamponade are well covered in the standard textbooks or reviewed in the medical literature, and will not be further considered here. Instead, we will address three less frequently discussed conditions that are encountered in patients with malignant disease: brain metastasis, hypercalcemia, and superior vena cava syndrome. We will briefly review these entities, their recognition, clinical significance, and appropriate therapy.

### BRAIN METASTASES

In most large general hospitals, approximately one in every six oncologic admissions is attributable to neurologic complications of malignancy. The majority of these patients present cerebral metastases, with carcinomatous meningitis, cord compression, and the peripheral neuropathies of cancer being less frequently encountered.

The diagnosis of cerebral metastasis is often difficult to establish, requiring a meticulous neurologic history

and physical examination, and extensive laboratory evaluation. Metastasis to the brain can occur in virtually any malignancy, but certain cancers have shown a high predilection for early cerebral metastasis. Breast carcinoma and carcinoma of the lung are the most frequently encountered primary sources of brain metastasis, but other tumors are not uncommonly indicted (Table I).

Presenting symptoms may vary; the majority of patients will present with unilateral weakness, and headache or behavioral changes, but other symptoms may be seen (Table II). The physical findings generally parallel the clinical symptoms (Table III). The electroencephalogram (EEG) has been shown to be abnormal in as many as 80% of patients with brain metastasis,<sup>1</sup> but these findings are nonspecific and nondiagnostic

TABLE I. Central Nervous System  
Metastases: Primary Site

Lung	49%
Adenocarcinoma	
Squamous cell	
Large cell	
Oat cell	
Breast	18.5%
Other	32%

Adapted from Shehata, et al: Cancer 34:258, 1974. (By kind permission of the author and publisher.)

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when considered alone. Similar EEG abnormalities may be seen in cerebral hematoma and infarction. Radioisotopic brain scanning has been reported to be positive in as many as 88% of cases<sup>2,3</sup> and, as in the case of the EEG, is frequently nondiagnostic if a solitary lesion is demonstrated along the distribution of a cerebral vessel. The brain scan is frequently unremarkable early in the evolution of a stroke, becoming abnormal later in the course, compared to the abnormalities that tend to occur early in brain metastasis. Since cerebral metastases have been shown to be multiple in 36-86% of cases,<sup>4</sup> EEG and/or brain scan studies are usually adequate to confirm the presence of intracerebral lesions in cancer patients. However, for those patients in whom the previous two procedures yield equivocal results, or in those patients who harbor a solitary lesion, other studies may be necessary to confirm the presence of brain involvement.

Lumbar puncture may be useful in differentiating cerebral metastasis from stroke, but the procedure

TABLE II. Central Nervous System  
Metastases: Symptoms

Unilateral weakness	36%
Behavioral or Mental	36%
Headache	33%
Seizures	28%
Aphasia	22%
Visual loss	11%
Ataxia	7%

Adapted from Posner JB: Neurologic complications of systemic cancer. *Med Clin North Am* 55:626, 1971. (By kind permission of the author and publisher.)

TABLE III. Central Nervous System  
Metastases: Signs

Unilateral weakness	63%
Impaired cognition	60%
Unilateral sensory loss	42%
Papilledema	39%
Visual field loss	35%
Aphasia	19%
Ataxia	7%

Adapted from Posner JB: Neurologic complications of systemic cancer. *Med Clin North Am* 55:626, 1971. (By kind permission of the author and publisher.)

should be considered potentially morbid or lethal for those patients who present documented or suspected increase in intracranial pressure. Red blood cells, pleocytosis, or xanthochromia suggest a vascular accident, whereas elevated cerebrospinal fluid protein and the presence of malignant cells in the spinal fluid favor a diagnosis of malignancy.

Cerebral angiography is a more specific technique in differentiating stroke from cerebral malignancy and primary from metastatic tumor. This procedure has a significant morbidity, and should be considered only in cases where less morbid procedures have proved unrewarding, or in those cases which are being considered for surgical extirpation.

Once the diagnosis of intracerebral metastasis has been confirmed, treatment should be instituted to alleviate symptoms and destroy or shrink the metastatic lesion (Table IV). The symptoms are usually secondary to compression of normal brain tissue by the tumor mass, and by surrounding tissue edema. The use of high dose corticosteroids has been shown to reduce the cerebral edema and dramatically alleviate some of the symptoms.<sup>5,6</sup> Dexamethasone 10 mg followed by 4 mg q.i.d., or prednisone 60-100 mg/day, have been used effectively. If severe stupor, coma, altered respirations and impending herniation are evident, the hyperosmolar agents such as mannitol, 50-100 mg intravenously, have had some efficacy.<sup>7</sup> Finally, improvement in symptomatology can be achieved in about two-thirds of patients, using rapid fractionation techniques of whole brain irradiation delivering 1,000 rads in one dose, or 1,500 rads in three daily fractions.<sup>3,8</sup>

For patients with minimal symptomatology, therapy can be delayed until the clinical evaluation is complete. If there is a solitary, nondominant hemispheric lesion, and if there is no other evidence of active malignancy, some authors have recommended surgical extirpation of the lesion.<sup>9</sup> The postoperative mortality rate varies between 22-49%, with significant morbidity in 24%.

TABLE IV. Central Nervous System  
Metastasis: Treatment

Steroids: prednisone 60-100 mg/day dexamethasone 10 mg IM, and 4 mg q.i.d.
Mannitol 50-100 gm I.V.
Surgical extirpation of single metastatic lesion (confirmed by angiography).
Whole brain irradiation: 1,000 rads in 1 frac- tion, or 3,000 rads in 15 fractions.



However, the risk may be warranted if the patient is free of other metastatic disease and the primary lesion is adequately treated.

Conventional radiation therapy, with 3,000–4,000 rads delivered over a period of three to five weeks, has offered the most consistent palliative results; approximately two-thirds of the patients demonstrate some response, lasting from six months to two years, with most patients suffering relapse within six months to one year following irradiation. Some authors report retreatment (as many as four times) after relapse, with approximately two-thirds of the patients responding to each subsequent treatment.<sup>3</sup> Brain necrosis has been reported to occur following high dose irradiation,<sup>10</sup> but this complication usually occurs one to several years postirradiation and is of little consequence considering the overall prognosis of the primary disease.

Chemotherapy has played but a small role in treating brain metastasis, due to the inability of most drugs to cross the blood-brain barrier. Intrathecal chemotherapy does not permit deep penetration of the agent into the brain substance, and is therefore useful only in those patients who present carcinomatous meningitis. The nitrosoureas and procarbazine have been shown to cross the blood-brain barrier and may be effective in those instances where the primary lesion has proved sensitive to the drugs.

## HYPERCALCEMIA

Hypercalcemia is a condition encountered frequently in patients with malignant diseases. Although it is usually mild and of little consequence, hypercalcemia is occasionally significant enough to pose a threat to life. It is this severe form of hypercalcemia that requires early recognition and prompt effective treatment. In the following discussion, the etiology, symptomatology, and various modalities of treatment for severe hypercalcemia will be considered.

Hypercalcemia may be seen as the result of: (1) increased bone resorption without a proportional bone deposition, as seen in widespread bony metastasis; (2) increased bone resorption due to the action of a parathormone-like substance elaborated by the neoplasm;<sup>11</sup> (3) elaboration of vitamin-D-like sterol by the neoplasm;<sup>12,13</sup> and (4) hypercitricemia, secondary to neoplastic production of citrate and binding of calcium in the unionized state, resulting in secondary hyperparathyroidism with hypercalcemia.<sup>14</sup>

Normal serum calcium levels range from 9–11 mg% (or 4.5–5.5 mEq/liter), with approximately 50% in the ionized state. The ionized fraction is in constant equilibrium with the calcium bound to albumin and to

various anions, predominantly phosphate and citrate. In the absence of abnormal absorption and excretion of calcium, the serum levels remain constant. The constancy of the level of ionized serum calcium is important in maintaining the stability and excitability of virtually all cell membranes. Increases in the serum ionized calcium level result in disruption of the stability of the cell membranes of neurons,<sup>15</sup> skeletal muscle and smooth muscle,<sup>16,17</sup> cardiac muscle,<sup>18</sup> renal tubular cells,<sup>19–22</sup> gastric<sup>23</sup> and intestinal mucosa, and pancreas,<sup>24,25</sup> causing the symptoms and biochemical abnormalities associated with hypercalcemia.

The symptoms of hypercalcemia are best categorized according to the systems involved (Table V). The biochemical abnormalities<sup>26</sup> include azotemia and hyperuricemia as a result of dehydration and renal failure, hypokalemia and metabolic alkalosis resulting from renal potassium wasting, and hypophosphatemia.

In treating the patient with hypercalcemia, the objectives are to reduce the extracellular calcium concentration, restore lost extracellular fluid volume, and correct the accompanying renal and cardiac disturbances. This is best accomplished by a combination of chronic and temporary or emergency measures. The emergency measures involve administering agents which (1) promote urinary excretion of calcium; (2) remove calcium by extrarenal means; (3) enhance deposition of calcium in the bones, soft tissues, or both; and (4) block mobilization of calcium from bone. Agents in the first category include saline diuresis, loop diuretics, sodium sulfate, disodium ethylenediaminetetraacetate (EDTA), and to a lesser extent corticosteroids. Agents in the second category include hemodialysis and peritoneal dialysis with calcium-free dialysates. The third category includes the use of neutral phosphates and calcitonin. The fourth category is the most useful clinically, and includes mithramycin, dactinomycin, and the glucocorticosteroids.

Infusion with large volumes of normal saline solution repletes the intravascular fluid volume, and increases the renal blood flow and glomerular filtration rate so that calcium is excreted more readily. The delivery of large

TABLE V. Manifestations: Hypercalcemia

Neurologic: weakness, drowsiness, stupor, coma
Gastrointestinal: anorexia, emesis, constipation, dehydration
Renal: polyuria, albuminuria, renal failure
Cardiac: tachycardia, arrhythmia

quantities of sodium to the distal tubule has been shown to facilitate renal tubular excretion of calcium.<sup>27</sup> The value of saline diuresis is limited by the large volumes of intravenous saline required to significantly reduce the serum calcium concentration. Congestive heart failure is a frequent side effect of this form of therapy and can be avoided by careful monitoring of the patient.

The use of the loop diuretics (furosemide and ethacrynic acid) has been shown to facilitate renal calcium excretion,<sup>28</sup> particularly when combined with forced saline diuresis.<sup>29</sup> These potent diuretics permit the use of larger volumes of saline without significant danger of congestive heart failure, providing the patient is carefully monitored for early signs of cardiac decompensation.

Sodium sulfate solutions (0.12 molar) have been used quite effectively for reduction of serum calcium levels over a period of one to five days, with the effect lasting several days.<sup>30,31</sup> One liter of this solution has been shown to lower the serum calcium level by approximately 1 mg%. Large volumes of intravenous solution may be required to lower serum calcium values by several mg% and may precipitate congestive heart failure as in saline diuresis. Nausea is the major side effect, occurring when the infusion rate exceeds 10 cc/min. The major drawback in the use of this agent is its relative unavailability; it must be freshly prepared by the pharmacist prior to use, since no commercial product is available.

EDTA (6 gram in 500 cc of isotonic saline solution), infused intravenously over a one-hour period, results in significant lowering of serum calcium levels for 24 to 48 hours.<sup>32</sup> Its clinical usefulness has been limited, however, due to the considerable number of patients who have developed renal tubular damage following administration of the drug.<sup>33,34</sup>

Peritoneal dialysis with solutions that are calcium free is an effective means of lowering serum calcium. However, it should be noted that most dialysis fluids are hypertonic and may reduce the intravascular fluid volume beyond its already depleted state. Hemodialysis does not impose this hazard, but does require sophisticated and expensive equipment and a skilled staff that is on call for emergency dialysis. For the most part, hemodialysis should be reserved for clinical management of the hypercalcemic patient with uremia and renal failure.

Infusion of 50 millimole of neutral phosphate solution promptly reduces serum calcium levels.<sup>35</sup> The increase in phosphate concentration results in binding of calcium ions and deposition of calcium salts in the bones and various soft tissues.<sup>36</sup> These metastatic calcifications in the heart, lungs, and kidneys may result

in serious functional disturbances, and even death.<sup>37</sup> The hypocalcemic effect following phosphate infusion may last six to ten days, and offers the advantage of administration in small volumes. Oral phosphate has been useful in doses of 50 millimole/day, and has not been associated with the adverse side effects of intravenous phosphates unless the calcium phosphate product is elevated.

The antineoplastic antibiotic (mithramycin and dactinomycin) have been the most useful agents currently available for treating hypercalcemia in malignant diseases. Dactinomycin, 2 mg as a single intravenous push, results in a progressive decline in the serum calcium level during the subsequent 24 to 48 hours.<sup>38</sup> Its major limitation is the rather marked nausea and vomiting that occur 24 hours after administration. Mithramycin (25 microgram/kilogram body weight given intravenously as a single dose) results in a similar lowering of serum calcium concentration without significant side effects.<sup>26</sup> These antibiotics appear to block the mobilization of calcium from bone. Their advantage over the previously mentioned regimens lies in their consistent hypocalcemic effect, rapidity of action, relatively mild side effects, and reduced calcinuria which lessens the threat of nephrocalcinosis.

Corticosteroids (30–100 mg/day of prednisone, or equivalent) reduce serum calcium in many patients with hypercalcemia of malignancy, presumably due to an antineoplastic effect or the inhibition of elaboration of a parathormone-like substance.<sup>39</sup> Several days of therapy are required to achieve the hypocalcemic effect, which is usually minimal in degree. However, steroids constitute a useful and frequently employed adjunct in the treatment of hypercalcemia.

One should remember that treatment of hypercalcemia using any of the above discussed regimens is only temporary, and every effort should be made to treat the underlying malignancy in order to permanently treat the hypercalcemia. Maintaining adequate hydration, high salt intake, frequent ambulation, and avoidance of drugs known to result in hypercalcemia (vitamin D, thiazide diuretics, and phosphate-binding antacids) will minimize the likelihood of hypercalcemic crisis in patients who are mildly hypercalcemic.

## SUPERIOR VENA CAVA SYNDROME

The superior vena cava (SVC) syndrome is a clinical entity which usually develops insidiously over a period of several months as a result of progressive obstruction of the superior vena cava by a space occupying lesion in the superior mediastinum. In most series, nine out of every ten cases are due to malignancy, and the



remaining 10% of cases are secondary to benign diseases such as histoplasmosis, mediastinal tuberculosis, sarcoidosis, and aortic aneurysm.

The SVC syndrome is manifested by swelling of the face, neck, chest, and arms, and by dilated superficial veins on the upper thorax, cough, hoarseness, choking, and headache. Experience with this condition at the University of Texas Southwestern Medical School<sup>40</sup> is summarized in Table VI. The SVC syndrome is not commonly fatal, but the underlying malignancy carries a poor prognosis when the SVC syndrome is present. One group<sup>41</sup> noted that ten patients who were not treated survived for three weeks, on the average, after the diagnosis of SVC syndrome was made. Of the patients who received radiation therapy, chemotherapy, or a combination of the two, the average survival was 6 to 20 months. In most series, the SVC syndrome was associated with mediastinal involvement by lung cancer in 50-60%, and by other malignancies in the remainder. Included in the latter group of cancers were lymphoma, Hodgkin's disease, and breast cancer.

The SVC syndrome is diagnosed approximately eight times more commonly in males than females.<sup>40</sup> It is preferable to have histologic confirmation of a malignant etiology prior to treating the SVC syndrome, but

because of the venous dilation encountered in the mediastinum and neck, biopsy of the scalene fat pad may result in uncontrolled bleeding, and bronchoscopy and mediastinoscopy may lead to severe life-threatening hemorrhage. In the series of patients reported in the literature as cited above, mediastinal node biopsy via a small anterior second interspace thoracotomy appeared to be the safest and the most consistently rewarding method of obtaining histologic confirmation of malignancy. In many patients, sputum cytology or distant accessible metastatic disease allowed confirmation of a diagnosis of malignancy, eliminating the need to employ more dangerous procedures.

Temporary symptomatic amelioration may be achieved by conservative therapy, involving bedrest in the semi-Fowler's position, salt restriction, and the use of diuretics to decrease the intravascular and extracellular fluid volumes with resultant reduction in tissue edema.<sup>41</sup> This temporary reduction in tissue edema and venous engorgement lasts from ten days to three months, and may permit sufficient time for establishing a tissue diagnosis.

In those patients who remain symptomatic despite adequate diuretic therapy, or in whom the clinical cause is rapidly progressive, prompt treatment with mediastinal irradiation appears to give the best results. Skinner<sup>41</sup> reported relief of obstruction in 17 of 23 patients who were treated with irradiation. Similar responses are reported in other series of patients.<sup>40,42,43</sup> Some authors favor the adjunctive administration of nitrogen mustard to improve the response rate to irradiation,<sup>40</sup> other authors have found no merit in this approach.<sup>40,41</sup> For patients who present severe obstruction, high dose corticosteroids may be helpful in minimizing further compromise due to increased tissue edema during the first few days of irradiation, but this has not been definitely proven. Bypass surgery has been attempted with dismal results,<sup>40</sup> but may yet be warranted in the treatment of patients suffering severe vena cava obstruction secondary to benign disease, and those patients who fail to respond to irradiation therapy for malignant disease.

## SUMMARY

Three clinical situations that are frequently encountered in patients with malignancy have been reviewed. Misconceptions in the evaluation and treatment of patients with these conditions are considered. The need for prompt recognition and appropriate therapy is addressed, alerting clinicians to reduce the morbidity and mortality associated with these clinical conditions presented by patients with malignant disorders.

TABLE VI. Superior Vena Cava Syndrome: Symptoms

Swelling (61 cases)	
Neck	65.5%
Chest	59.0%
Face	34.4%
Arms	23.9%
Dilated veins	100.0%
Cough	60.6%
Central Nervous System	
Headache	37.5%
Nausea	37.5%
Dizziness	12.5%
Visual	12.5%
Flushing	9.8%
Hoarseness	4.9%
Choking	8.1%

Modified after Urschel, et al: *Dis Chest* 49:156, 1966. (By kind permission of the author and publisher.)

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## NAVY MEDICINE — 1875

ASIATIC STATION. Surgeon John W. Coles reports on conditions at U.S. Naval Hospital, Yokohama, Japan:

There are connected with this hospital a surgeon, a passed-assistant surgeon, and nine employés, viz.; an apothecary, watchman, two cooks, a gardener, and four coolies. In consequence of the limited number of employés, the duties assigned them differ from those performed by similar persons in naval hospitals at home. The apothecary dispenses the medicines, and gives them to the patients; he oversees the kitchen and mess-room; takes care of and issues all stores and bedding; keeps the meteorological register; acts as nurse, and attends to the general police of the hospital. The watchman acts as night-nurse and night-watchman. The cooks, in addition to cooking, set the tables and keep the mess-rooms in order. The gardener has general charge of the grounds, is gate-keeper, and does the repairs about the hospital. Two of the coolies do the cleaning and attend to sick officers and men; the other two act as laborers wherever required. The small allowance of pay for employés will not admit of the employment of a regular nurse, so convalescents are used to assist in nursing until they are able to return to duty.

The ventilation of the hospital is good, excepting in the ward for men in the second story of the main building. But as its windows open on a covered veranda, and to the south, it is sheltered from the north winds that prevail during the winter, and sufficient ventilation can be had by lowering the sashes without admitting much cold air. The other parts of the hospital are over-ventilated in consequence of the badly-fitting wood work. This is especially the case in the small-pox ward, a frame building elevated about two feet from the

ground, the open space being only covered by lattice-work. The boards of the flooring have large open cracks, which admit so much air as to make it almost impossible to heat the ward in cold weather. This can be improved by boarding over the lattice-work, but it is hardly necessary to do so, as the two rooms adjoining the ward, and intended for officers, will probably accommodate all the small-pox cases sent here. There is plenty of light in the daytime in every part of the hospital. At night rape-seed oil is burned, which gives an excellent light and is very cheap. Open grates were put into the ward and nearly all the rooms of the main building at the time the hospital was erected, but they were afterwards found inadequate to supply sufficient heat, and coal-stoves were substituted, and also placed in the other two wards. Wood is now being used in these stoves, excepting in the coldest weather. It is much cheaper than coal, besides being cleaner and more pleasant. The Japanese soft coal, generally used, is very dirty, produces a large quantity of ash, soon burns out the stove-grates, and clogs the chimneys with soot. When the fires are constantly burning, the soot collects so rapidly that the chimneys and stove-pipes must be cleaned almost every day, thus causing a great deal of dirt and trouble, besides danger of fire originating in the chimneys.—*Hygienic and Medical Reports by Medical Officers of the U.S. Navy*, prepared for publication, under the direction of the Surgeon-General of the Navy, by Joseph B. Parker, A.M., M.D., Surgeon, U.S. Navy, Assistant to the Bureau of Medicine and Surgery. Washington: Government Printing Office, 1879, pp. 151-153. 🍀



# Multiple Keratocysts of the Jaws as a Manifestation of the Nevroid Basal Cell Carcinoma Syndrome:

## Report of a Case and its Surgical Management

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In recent years there has been increased interest in keratocysts of the jaws because of their high recurrence rate and their association with the nevroid basal cell carcinoma syndrome. The syndrome has become a well recognized and frequently diagnosed disease since the work of Gorlin and Goltz<sup>1</sup> was published. Our purpose in presenting this paper is to review the multiple characteristics of the syndrome, and to discuss the surgical management of a unique case in which keratocysts obliterated both maxillary antra.

The most common features of the nevroid basal cell carcinoma syndrome are: multiple basal cell carcinomas of the skin, multiple jaw cysts, rib anomalies, and hyporesponsiveness to parathyroid hormone. Common but less frequent are: palmar pitting and dyskeratosis, skin cysts, mild mandibular prognathism, scoliosis,

cervical or thoracic vertebral fusion, frontal and biparietal bosses, shortened metacarpals, mental retardation, congenital hydrocephalus, dural calcification, dystopia canthorum, hypertelorism, ovarian fibromas, and pelvic calcifications. Other reported features include medulloblastoma, infantile genitals, and female pubic hair patterns in males along with scanty facial hair.<sup>2</sup> The syndrome has a genetic pattern with a dominant mode of inheritance, and is determined by a highly penetrant autosomal gene with multiple and variable effects.<sup>3</sup>

### REPORT OF CASE

An 18-year-old male was referred to the Naval Regional Medical Center San Diego in August 1973 when multiple cysts of the jaws were noted on a panoramic radiograph during a screening examination conducted at the Naval Training Center, San Diego.

The patient denied previous symptoms associated with his jaws, teeth, sinuses, or eyes, except that the maxillary third molar and mandibular second molar teeth on the left side had been extracted several years before. He had a vague recollection that some type of cysts were present. Communication with the patient's former dentist confirmed the history of cystic lesions

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The opinions or assertions contained herein are those of the authors, and are not to be construed as official or reflecting the views of the Department of the Navy, or the naval service at large.

associated with the two extracted teeth, although no histologic report was available. Review of the family history revealed that the patient's father and younger brother had had similar cysts of the jaws. The father also had multiple basal cell nevi affecting the skin of the face.

### *Physical Examination*

Examination revealed an alert, cooperative, well developed and well nourished Caucasian male of normal intelligence. Orofacial examination revealed a suggestion of frontal boss, and the mandible appeared asymmetrical with increased mass in the region of the left angle. Several small pigmented nevi were present on the facial skin. Three sebaceous cystlike lesions were noted on the dorsal neck. The patient had multiple palmar pits. The remainder of the examination was unremarkable.

Radiographs of the facial bones and mandible revealed a well circumscribed radiolucent area of the left mandible, extending from the apical region of the first molar to within 1 cm of the sigmoid notch. The second and third molars were missing. The maxillary right third molar was impacted in a horizontal position near the antral floor and presented a radiolucent area around the coronal portion. The left maxillary canine was impacted in the anterior antral wall, and a radiolucent area was noted around the crown. The left and right maxillary sinuses had a cloudy radiopaque quality. At the edentulous maxillary left third molar site, a suggestion of a radiolucent area was noted. No abnormal calcifications were detected on posteroanterior (PA) and lateral views of skull X-ray studies. Erect PA and lateral chest radiographs showed a normal osseous thorax, except for mild scoliosis.

### *Surgical Procedure*

Surgery was performed with the patient under general anesthesia. In each surgical area, a cystic lesion which contained a white creamy or cheesy substance was encountered. The radiolucent lesion in the left mandible was found to consist of two separate cysts, with a complete bony septum between them. The impacted maxillary left canine was associated with a cyst which completely obliterated the antrum and required removal through a Caldwell-Luc approach. The edentulous maxillary left third molar area was explored, and a cystic lesion which was in direct contact with the antrum was removed. The horizontally impacted maxillary right third molar, which was noted to present a cystic mass associated with the crown, was dislodged

into the right antrum during luxation. A Caldwell-Luc approach was then initiated into the right antrum, where a large cyst was found to be completely occluding the sinus. This was also enucleated, and the third molar was removed. The incisions were all closed primarily after the antra had been packed with iodoform gauze. An excisional biopsy was performed to determine the nature of the facial skin lesions.

### *Postoperative Course*

The postoperative course was uncomplicated except for the usual sequelae of pain and edema. An oral-antral fistula formed in the right third molar region, and this was closed secondarily. The left mandibular bony defect showed radiographic evidence of bony healing four months postsurgery, and there was no evidence of cyst recurrence.

### *Pathological Findings*

Grossly and histologically, the cysts removed from all locations were similar. Portions of the cyst walls were composed of fibrous tissue ranging up to 0.6 cm in thickness. The cyst lumens contained soft cheesy material. Fragments of bone were noted in the cyst walls in some instances, and separate slivers of normal appearing bone were present.

Microscopically, the cysts were composed of mature fibrous tissue with a lining of keratinizing stratified squamous epithelium (Figures 1-4). In the maxillary specimens, adjoining sinus mucosa was covered by pseudostratified ciliated columnar epithelium, and the intervening sinus wall contained thin layers of lamellar bone (Figure 1). The stratified squamous epithelium showed a regular maturation pattern with no cytologic atypia (Figures 2-4). The cyst lumens contained laminated keratotic and parakeratotic debris, intermixed with amorphous eosinophilic material.

Inflammatory changes were frequently observed in the fibrous tissue directly beneath the epithelium, particularly in areas where the epithelium was ulcerated (Figures 3 and 4). Infiltrates of segmented neutrophils, lymphocytes, plasma cells, and histiocytes were present in these areas, and the more severely involved zones contained cholesterol clefts surrounded by foreign body giant cells (Figure 4). Focal areas of hemorrhage contained hemosiderin laden macrophages. Isolated slivers of lamellar bone were histologically unremarkable.

The facial skin lesion was characterized as an intra-dermal nevus, with no atypical features or evidence of basal cell carcinoma.



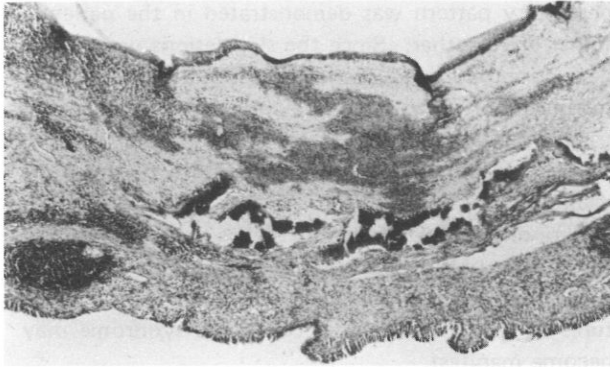


Figure 1.—Specimen from the left maxilla. The keratocyst lumen at the top of the illustration is lined by normally maturing stratified squamous epithelium. The maxillary sinus (at the bottom of the field) is lined by pseudostratified ciliated columnar epithelium. The intervening fibrous wall contains focal accumulations of lymphocytes and plasma cells; a lymphoid nodule appears at the lower left. In central location, note darkly staining and partially fragmented lamellar bone. (Hematoxylin-eosin [H&E], x 180)

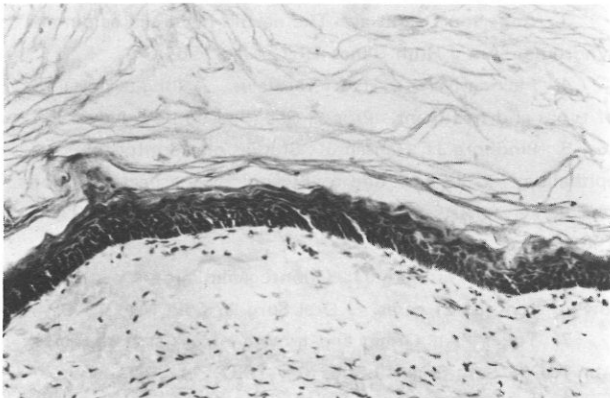


Figure 2.—Uninfamed portion of keratocyst wall is lined by keratinizing and normally maturing stratified squamous epithelium. In the upper field, the cyst lumen contains desquamated keratotic material. Note fibrous tissue beneath the epithelium. (H&E, x 270)

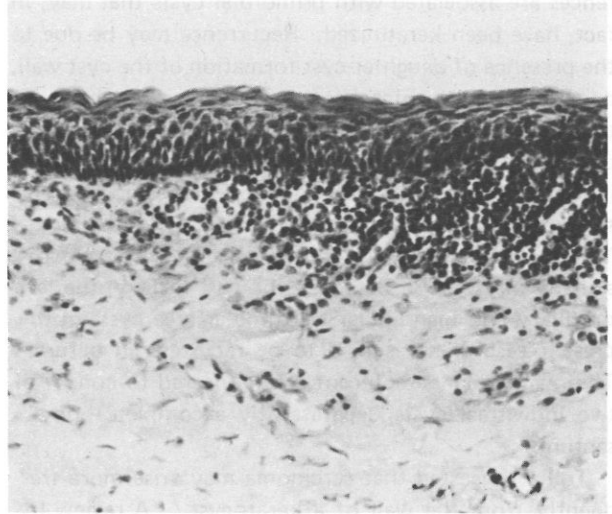


Figure 3.—Focal accumulations of lymphocyte and plasma cells are present beneath the stratified squamous keratocyst-lining epithelium. (H&E, x 620)

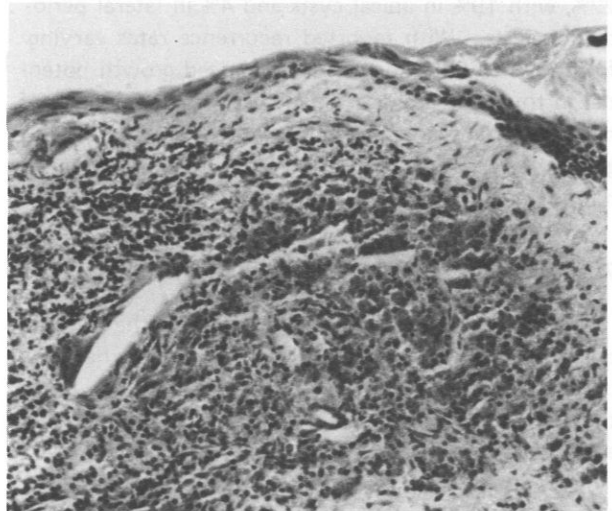


Figure 4.—Cholesterol clefts in the fibrous stroma adjacent to a keratocyst are surrounded by multinucleated giant cells, histiocytes, lymphocytes, plasma cells, and a few segmented neutrophils. Directly above the mass of inflammatory cells, the keratinizing stratified squamous keratocyst-lining epithelium is attenuated. (H&E, x 560)

## DISCUSSION

### *Recurrence*

It is of surgical interest that keratocysts seem to have a pronounced tendency to recur.<sup>4-9</sup> Most of the recurrences are associated with primordial cysts that may, in fact, have been keratinized. Recurrence may be due to the presence of daughter-cyst formation of the cyst wall, or to proliferation into connective tissue by the cyst epithelium that has been left behind after enucleation of the delicate cyst membrane. The tendency to recur indicates that keratinized epithelium has a more intensive growth potential than ordinary cyst epithelium. This may explain why keratocysts are large and occasionally multiple.<sup>6</sup> Based on the past history, the left maxillary and mandibular third molar area cysts in the present case are presumed to be recurrent in nature. The mandibular radiolucent area appeared to consist of two individual cysts, separated by a complete bony septum.

Toller suggested that carcinoma may arise more frequently from the wall of a keratocyst.<sup>7</sup> A review by Eversole, Sabes, and Rovin<sup>10</sup> of 36 instances of central epidermoid carcinoma revealed 75% to be associated with a cyst lining. Residual odontogenic cysts accounted for 41%, while 15% were in residual cysts reported to have a keratinized lining. Dentigerous cysts represented 22%, with 19% in apical cysts and 4% in lateral periodontal cysts. With reported recurrence rates varying from 15% to 58%, there is a recognized growth potential in this relatively aggressive cyst. In the absence of malignant transformation documented in a true odontogenic keratocyst, it is suggested that this is an extremely rare phenomenon.<sup>10</sup>

### *Treatment of Cysts*

Treatment of cysts is surgical. Before the initial operation every patient should be informed that the cysts may recur, or new cysts may develop, or both these possibilities may occur. Two operative techniques are generally accepted:

- 1) Complete enucleation of the cyst sac. In the case presented here, all cysts were enucleated with thorough curettage followed by primary closure, which we regard as the treatment of choice for these lesions.


- 2) Marsupialization, or the Partsch operation, which consists of cutting an adequate window in the outer wall of the cyst through which the contents of the cyst are evacuated; the remaining part of the cyst membrane is not removed. The permanent opening relieves the pressure, allows the lining of the cyst to reduce in size, and permits removal at a later date, if necessary.

Stoelinga has recommended circumcision of the mucosa overlying the keratocyst, and enucleation followed by cauterization of the body cavity.<sup>11</sup>

The diagnosis of cystic lesions of the jaw exhibiting keratinization should suggest that other symptoms consistent with the nevoid basal cell carcinoma syndrome should be considered. The patient herein described presented suggestive frontal bosses, scoliosis, sebaceous cysts of the skin, and palmar pitting, but no other skeletal or skin lesions consistent with the syndrome. The hereditary pattern was demonstrated in the patient's father and brother. Since the skin lesions usually appear during the second and third decades, the lack of manifestation of basal cell nevi may simply reflect the patient's relatively young age. It could also be that this case represents an incomplete form of the syndrome.

Periodic follow-up examination is important in patients who present multiple keratocysts of the jaws, because additional cysts may develop and other features of the multiple basal cell nevus syndrome may become manifest.

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# SCHOLARS' SCUTTLEBUTT



Congratulations to ENS Dale Venning, a third year student at the University of Miami School of Medicine, who was recently elected Speaker of the House of Delegates of the American Medical Student Association. Dale is a 1972 graduate of the University of Florida, where he majored in chemistry. A high honor graduate, he was elected to Phi Beta Kappa.

Keep up the good work. We are proud of your achievement.

\* \* \*

As we have emphasized many times in the past, the choice of a medical specialty must be given serious thought. In choosing, assess your own aptitudes, interests, and personality. Consider also the direction in which American medicine seems to be heading: towards greater involvement in primary care.

Finally, give full consideration to the opportunities that the Navy offers for a full, all-encompassing career. If this is the kind of personal and professional fulfillment you want, go after it. Don't look on your time in the Navy as an obligation which must be served. We have a first-class health care system and are working constantly to make it better. We want many of you to become a permanent part of Navy medicine.

Now is the time to apply for Navy-sponsored graduate medical education (GME). The information given

below is contained in a letter which has been sent to all eligible students; it describes the application and selection process, and includes a chart showing all first-year GME positions available in training year 1976-1977.

Prepare the best application that you can. Visit the program directors. Get good letters of recommendation. If you have any questions regarding the application process, let us know. We are here to help you.

\* \* \*

This communication lists the first-year graduate medical education (GME) positions available in the Navy beginning with the 1976-1977 training year (Table 1). Application forms for such training and for your appointment (promotion) in the Medical Corps are included.

The Navy has discontinued seeking first-year trainees under the National Intern and Resident Matching Program. In lieu of using the matching operation, the directors of first-year GME programs in naval hospitals will meet in Washington to evaluate applications. The following schedule of dates will apply:

- 1 September 1975 - Closing date for receipt of applications in the Bureau of Medicine and Surgery.
- September 1975 - Selection process.
- 21 October 1975 - Notification of selection or nonselection for Navy programs will be mailed to all candidates. (This date may be advanced if administrative procedures permit.)
- 15 November 1975 - Notification of selection or nonselection for deferments will be mailed to students who have requested deferments of longer than one year.

Each student must arrange for the dean of his or her medical or osteopathic school to complete a form indicating the student's rank in class. This form must be appended to a copy of the student's updated transcript and a letter of recommendation, and the entire package forwarded to the Bureau of Medicine and Surgery. Additional letters of recommendation can also be forwarded.

Students in the Armed Forces Health Professions Scholarship Program are *required* to apply for training in the Navy, and to list all hospitals that offer the specific training program for which they have applied. Hospitals that are not listed will be added by the selection committee.



**TABLE 1.—SPECIALTY AND NUMBERS OF PROGRAMS OFFERED IN GRADUATE MEDICAL EDUCATION  
TO GRADUATING STUDENTS DURING THE 1976-1977 TRAINING YEAR**

NAVAL HOSPITAL	ANES C/CD/F	DERM C/CD/F	FAM.P C/CD/F	IN.MED C/CD/F	NEURO C/CD/F	OBGYN C/CD/F	OPHTH C/CD/F	ORTHO-S C/CD/F	OTO C/CD/F	PATH C/CD/F	PEDS C/CD/F	PSYCH C/CD/F	RADIO C/CD/F	SURG C/CD/F	URO C/CD/F	NEURO-S C/CD/F	TOTAL
CAMP PENDLETON, Calif.	- - -	- - -	9 - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	9
CHARLESTON, S.C.	- - -	- - -	9 - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	9
JACKSONVILLE, Fla.	- - -	- - -	9 - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	9
PENSACOLA, Fla.	- - -	- - -	6 - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	6
BETHESDA, Md.	- - 2	- - 1	- - -	4 4 -	- - 2	3 - -	- - 2	- 2 -	- 1 -	3 - -	3 - -	- 4 -	- - 2	2 2 -	- - 1	1 - -	39
OAKLAND, Calif.	- - 4	- - -	- - -	3 1 -	- - -	3 - -	- - 2	- 2 1	- - 3	2 - -	3 - -	- 3 -	- - 3	- 3 -	- - 1	- - -	34
PHILADELPHIA, Pa.	- - 2	- - 2	- - -	6 2 -	- - -	2 - -	- - 2	- 1 1	- - 2	- - -	2 - -	- 4 1	- - 3	1 1 -	- - 1	- - -	33
PORTSMOUTH, Va.	- - 2	- - -	- - -	6 6 -	- - -	6 - -	- - -	- - 3	- - -	2 - -	5 - -	- - -	- - -	2 2 -	- - 2	- - -	36
SAN DIEGO, Calif.	- - 4	- - 4	- - -	12 - -	- - -	4 - -	- - 3	- 4 -	- - 3	3 - -	5 - -	- - -	- 4 3	- 4 -	- - 2	- - -	55
TOTALS	14	7	33	44	2	18	9	14	9	10	18	12	15	17	7	1	230

**KEY:**

C = Categorical: 12 months in a single discipline.

CD = Categorical Diversified: at least 6 months in the listed specialty, plus other rotations.

F = Flexible: at least 4 months in medicine, plus other rotations.

- = means that type of program is not offered at that hospital.

**SPECIALTY ABBREVIATIONS:** ANES = Anesthesiology; DERM = Dermatology; FAM.P = Family Practice; IN.MED = Internal Medicine; NEURO = Neurology; OBGYN = Obstetrics/Gynecology; OPHTH = Ophthalmology; OTO = Otolaryngology; ORTHO-S = Orthopedic Surgery; PATH = Pathology; PEDS = Pediatrics; PSYCH = Psychiatry; RADIO = Radiology; SURG = Surgery; URO = Urology; NEURO-S = Neurosurgery.

**SPECIAL NOTE:** Categorical and Categorical Diversified programs in pediatrics, pathology, obstetrics and gynecology, psychiatry, and family practice are first-year residencies/internships. All other trainees will be advised upon reporting for duty as to how they can apply to continue beyond the first-year level.

From: \_\_\_\_\_

(Rank) (Name) (Social Security No.)

Address: \_\_\_\_\_

To: Chief, Bureau of Medicine and Surgery (Attn: Code 314), Navy Department,  
Washington, D.C. 20372

Subj: Graduate Medical Education and appointment in the Navy Medical Corps; application for  
(for use only by students in their last year of medical or osteopathic school)

Encl: (1) Physical condition statement

1. It is requested that this letter be considered as my application for the training program(s) that are listed below *in the order of my preference*. If I hold an appointment in a Navy student program, it is requested that it also be considered as my application for an appointment in the Navy Medical Corps.

[illegible]

**INSTRUCTIONS:** Under "PROGRAM" list Categorical, Categorical Diversified, or Flexible. Under "SPECIALTY" list the discipline under which the program appears on the listing of programs available (Table 1). Under "HOSPITAL PREFERENCES" list hospitals from left to right in order of preference that offer the program sought.

REMARKS:

Check one of the blocks

- ☐ Prime preference is for Navy program.
- ☐ Prime preference is for civilian program.
- ☐ No prime preference.

2. Enclosure (1), the statement of my physical condition, is forwarded for inclusion in my file.
3. Under separate cover I shall have the dean of my school provide an up-to-date transcript of my grades and a letter of recommendation. I understand that additional letters of recommendation can be forwarded to the Bureau of Medicine and Surgery, Code 314.
4. In the event a training position is not available for me in a naval hospital, it is requested that I be granted a deferment of my active service obligation until I shall have completed training in a civilian institution as noted below. (Applicable only to students in the Armed Forces Health Professions Scholarship Program, Ensigns 1915, and civilians.)

Specialty: \_\_\_\_\_

To be completed on: \_\_\_\_\_  
Month/Year

5. I understand that if I am not selected for training in a naval hospital, and if I am not granted a deferment to complete full specialty training in a civilian institution, my active service will be delayed for one year only to participate in one year of graduate medical education in a civilian institution. At the end of that period I will be called to active service. (Applicable only to students who hold appointments in Navy student programs.)

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Telephone Number

\_\_\_\_\_  
*EXACT* date of anticipated graduation  
Month - Day - Year

NOTE: If you will complete the course requirements for your degree more than 45 days prior to the anticipated date of graduation, please indicate the completion date in this space.

\_\_\_\_\_  
This remarks section can be utilized to provide the selection committee with any special information you desire to have considered.



Limitations on the number of available positions may preclude a student's selection for first-year programs in naval hospitals. In preparation for that contingency, students are urged to register at the appropriate time with the National Intern and Resident Matching Program of the American Medical Association (AMA), or the Intern Registration Program of the American Osteopathic Association (AOA). Of course, students who desire to seek training on their own (if not selected Navy) are free to do so.

Students selected for Navy programs who have also registered with an intern placement plan will withdraw from the plan upon notification of selection by the Navy. As in the past, the Navy will continue to offer unfilled first-year positions to qualified students who do not obtain positions under the AMA or AOA placement plans. Information concerning such vacancies will be

available each year after the AMA or AOA placement announcements.

Armed Forces Health Professions Scholarship students who are not selected for Navy programs may request active-duty deferment to complete training in a civilian institution by providing the information required in paragraph (4) of the application for Navy GME. Notice of selection or nonselection for deferment will be forwarded to each candidate prior to mid November. Students not selected for Navy programs or deferments will be called to active duty after completion of one year of GME in a civilian institution. In future years those officers may apply or reapply for Navy training; if not selected, they may request release from active duty to complete training in a civilian institution prior to completion of their remaining obligation. ☸

### CAPTAIN'S CUP

For the third consecutive year, members of the Naval Aerospace and Regional Medical Center (NARMC) Pensacola, Florida, have won the Captain's Cup, awarded each year to the local command that amasses the greatest number of points in a wide range of intramural athletics.

RADM R.D. Nauman (MC), commanding officer of NARMC, accepted the trophy from CAPT C.R. Long, commanding officer of NAS Pensacola. During the presentation ceremony, the cup was officially "retired" to the permanent custody of the medical center.

Some 60 medical center personnel shared in the victory by placing first in football and horseshoes; second in racquetball, handball, softball, golf, volleyball, and

table tennis; third in basketball and badminton; fourth in bowling; and fifth in pistol. The medical center tennis team No. 1 placed fifth, while tennis team No. 2 placed seventh.

In addition to team accomplishment, DT2 Arnold Sanchez was named singles champion in table tennis. CAPT James Wright, an Air Force veterinarian who accompanied the NARMC softball team to Indiantown Gap last August for the interservice softball championship, was also honored, as was HM2 Mike Massengill from the Naval Aerospace Medical Institute, who participated in the Sixth Naval District football championship as part of the team from NAS Meridian, Mississippi. —PAO, NARMC, Pensacola, Florida. ☸



**WINNING TEAM.** The NAS Pensacola Captain's Cup is presented to members of the Naval Aerospace and Regional Medical Center for the third consecutive year.

## ROCKING PLATFORM AIDS PARAPLEGICS

Neurosurgeons who deal with the clinical treatment of paraplegics know how quickly pressure sores can develop in the insensitive areas of the skin below the level of transection of the patient's spinal cord. Edema, blistering, and skin breakdown can occur within an hour or two of continual pressure upon a bony prominence. Prophylactic treatments recommended to prevent such problems include turning the patient in bed every hour, padding the bony prominences to relieve pressure, and use of alternating pressure mattresses, "rocking beds," and Stryker and rotating beds and frames, both horizontal and circular.

When there is no pressure, there is no sore. The first important intrinsic factor in the development of pressure sores appears to be a loss of vasomotor control, which lowers the vascular bed tone in the paralyzed part of the body, especially in the lower limbs. Given these conditions, pressure which could be easily tolerated under normal conditions will block the blood supply, with resultant ischemia.

The second important intrinsic factor is the loss of sensation in the paralyzed parts. Under normal conditions, a sensation of pressure causes a person to change position. The paraplegic, however, is unable to feel pressure, and is unaware that ischemia is occurring.

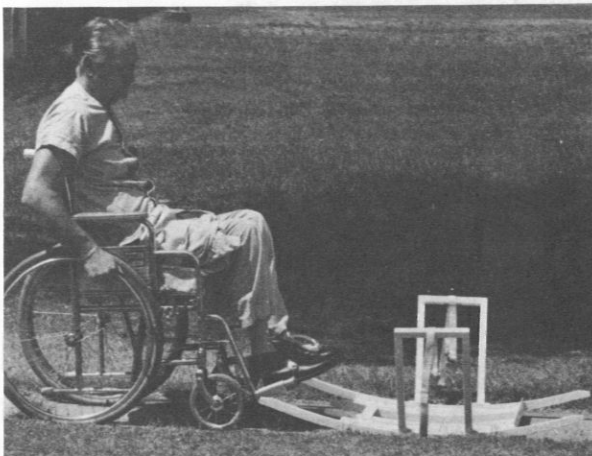
Trumble (1930) has found that pressure of more than 1½ pounds per square inch (about 80 mm Hg) over a long period is likely to cause death of tissues; in addition, macerated skin is often found in incontinent paraplegic patients who lie on wet bed linen, and in the later stages of paraplegia there is frequently coldness due to vasoconstriction of the paralyzed limbs. The following stages in the development of pressure sores

can be distinguished: (1) transient circulatory edema; (2) permanent damage to cutaneous tissues; and (3) deep penetrating necrosis, which may ultimately involve fascia, muscles, and bone.

A new aluminum rocking platform, designed by a paraplegic, has proven to be a useful aid in preventing the development of pressure sores. The rocker consists of two panels, about 1 foot wide, which are attached to 1 inch square rockers with safety hinges. The device can be adapted to almost any wheelchair.

Most paraplegics in wheelchairs can readily apply the force needed to roll onto the rocker platform, while maintaining good control. Handwheel annuluses at the side of the rear wheels are then used to provide rocking propulsion. The rocker is extremely stable, with additional support provided by retaining straps on its sides. Even patients who are completely paraplegic have sufficient strength in their upper extremities to provide an easy rocking motion which allows pressure to be more equitably distributed over the buttocks.

Further information about the rocking platform is available from Victor F. or Warren R. Wojcik, 3102 Alta Vista Drive, Fallbrook, California 92028.—Victor F. Wojcik; Warren R. Wojcik; and CAPT F.E. Jackson, MC, USN, (Ret.), 4933 Conejo Road, Fallbrook, California 92028. ☛



Most paraplegics in wheelchairs have sufficient strength in their upper extremities to roll their wheelchairs onto the platform and maintain a rocking motion.



With the wheelchair securely strapped onto the platform, rocking motion allows pressure to be equitably distributed over the buttocks.

# Notes and Announcements



## RESTRUCTURED RESERVE

Manning levels in the 80 naval regional medical center reinforcement units of the Reserve showed a sharp rise in November and December, reflecting the growing interest and confidence of members of the Selected Reserve in the restructured program. Units will soon be able to identify themselves with an active duty command, and will announce their training goals and requests for support. In each readiness area, the Bureau of Medicine and Surgery has nominated a senior member of the Naval Reserve to serve as program sponsor field representative. This Reservist will be responsible for establishing contact between active commands and their supporting Reserve units, and for coordinating area training programs.

The principal drilling activity and the primary goal of all units will be unit and individual training to defined readiness requirements, carried out in the hospital or medical center environment. Wherever possible, drills should take place at the parent command. Otherwise, it is appropriate to drill at a hospital activity of another military service, a nonmilitary Federal hospital, or a civilian hospital.

All units should drill at least two weekends annually at the parent command. It is also expected that groups or teams from units will take their annual two-week active duty for training at the parent command. Training goals and methods will be established in BUMED; didactic teaching will be the responsibility of the Reservists themselves.

Hospitals and regional medical centers should

be prepared to provide classroom and meeting facilities for drilling units, and quarters and messing for enlisted members. A variety of opportunities for meaningful on-the-job training must be offered. It is suggested that an officer in each command be designated as the contact point to interface with program sponsor field representatives and Reserve unit commanding officers.—BUMED Code 00.☛

## AMBULANCE SERVICE

The Naval Regional Medical Center Long Beach has completed an extensive study of ambulance services. The initial study, involving only the Center complex, was approached with three main objectives: (1) Were the ambulances being properly and efficiently utilized? (2) Was the number of assigned operators essential for level of services involved? and (3) Was a fair value of services being received for expenses incurred?

The study revealed that over the past two years ambulances had been used for other than legitimate patient movement, e.g., blood runs, and transporting ambulatory patients between the dispensaries and the hospital. Legitimate ambulance runs averaged 1.29 trips for day shifts (0700-1500 and 1500-2300), and 0.5 trips for night shifts (2300-0700).

The following actions were then taken:

- Except for interhospital movement of inpatients and an occasional pick-up of retired and supernumerary patients under special circumstances, off-base ambulance service has been limited to active-duty patients only.



•Use of other types of transportation was considered for other than legitimate ambulance runs. It was concluded that costs could be substantially decreased by reducing the number of operators assigned each shift, without degradation of services or capability.

•The night shift operator was eliminated entirely, and "as needed" services are purchased from three local ambulance companies.

Base on three months' experience, projected savings at the Center complex are approximately \$84,000. A further study of ambulance services and operator requirements is being accomplished at all NRMCMC Long Beach dispensaries. Because of the pure military nature of the host command's missions and operational commitments, operator requirements probably cannot be reduced as much as at the Center complex. However, it may be possible to release one or more ambulances for reassignment, eventually reducing requirements for new ambulance purchases.

All medical activities, especially NRMCMCs, are urged to conduct ambulance service surveys similar to those conducted at NRMCMC Long Beach. Additionally, activities should review their organizations to insure that maximum use is made of all resources, while simultaneously guarding against any degradation of services.

Copies of the study described above are available from: Commanding Officer, Naval Regional Medical Center, Long Beach, California 90801. — BUMED Code 00.☛

## NAVY NURSES OFFERED TRAINING

Applications are being accepted from Navy nurses for training as family nurse practitioners and operating room staff nurses.

The Family Nurse Practitioner Course was established in October 1974 at NRMCMC San Diego in conjunction with the University of California, San Diego School of Medicine/University Extension. During the first six months of didactic training, nurses learn assessment skills and techniques of interviewing and history taking. Instruction is also given in growth and development, anatomy and physiology, and consultation and communication. Some clinical experience is provided at the medical center.

Students are subsequently assigned to duty for an additional six months of clinical experience

under a physician preceptor. At the completion of the year-long training program, students may qualify as family nurse practitioners, and will be used as such. An obligation of two years of active duty is incurred after completing the preceptorship.

Candidates for the Family Nurse Practitioner Course should be members of the Regular or Reserve Navy, and should have a minimum of three years of clinical nursing experience, with five years preferred. They should have earned a bachelor of science degree in nursing, and have a background in biological and life sciences. Letters of recommendation are required, as are performance ratings which reflect excellent to outstanding knowledge, versatility, dependability, initiative, appearance, interprofessional and patient relationships, quality and quantity of job performance, and cooperation with management.

Applications should be forwarded to the Naval Health Sciences Education and Training Command, Code 7, National Naval Medical Center, Bethesda, Maryland 20014, in accordance with BUMEDINST 1520.14B.

\* \* \*

A new orientation program has been developed to offer junior Nurse Corps officers an opportunity to become acquainted with the range of technical skills required for duty in the operating room.

Students in the Operating Room Orientation Program will receive six weeks of temporary additional duty at NRMCMC Camp Pendleton, California, or NRMCMC Charleston, South Carolina. Upon completion of training, they will return to their original command for assignment in the operating room as staff nurses.

Candidates should be members of the Regular or Reserve Navy. No service obligation is incurred with this training. However, students are expected to have a minimum of one year of obligated service remaining after completion of the program.

A letter of application, such as is provided in BUMEDINST 1520.8D, should be sent to the Naval Health Sciences Education and Training Command, Code 7, National Naval Medical Center, Bethesda, Maryland 20014. Applications should be endorsed by the command, the chief nurse, and the operating room supervisor, as appropriate. — BUMED Code 32.☛

## NAVAL RESERVE DENTAL SEMINAR

A Naval Reserve Dental Seminar was conducted at the Bureau of Medicine and Surgery, 14-18 April 1975, to inform inactive Naval Reserve dental officers of current organization, programs, policies, and trends affecting the Naval Reserve, with particular emphasis on the management of the dental program.

Participating in the seminar were 31 commanding officers, or their representatives, of the Reserve naval regional dental centers and Naval Reserve dental companies. These officers all volunteered to attend the seminar under permissive active duty for training orders, without reimbursement for travel and per diem costs. Fifteen of the 31 officers were in nonpay billets, and therefore did not receive pay for performing active duty for training. Also attending the seminar were dental program officers from six naval districts assigned Naval Reserve responsibility.

Representatives from the office of the Chief of Naval Operations, the Bureau of Naval Personnel, and the Bureau of Medicine and Surgery spoke at

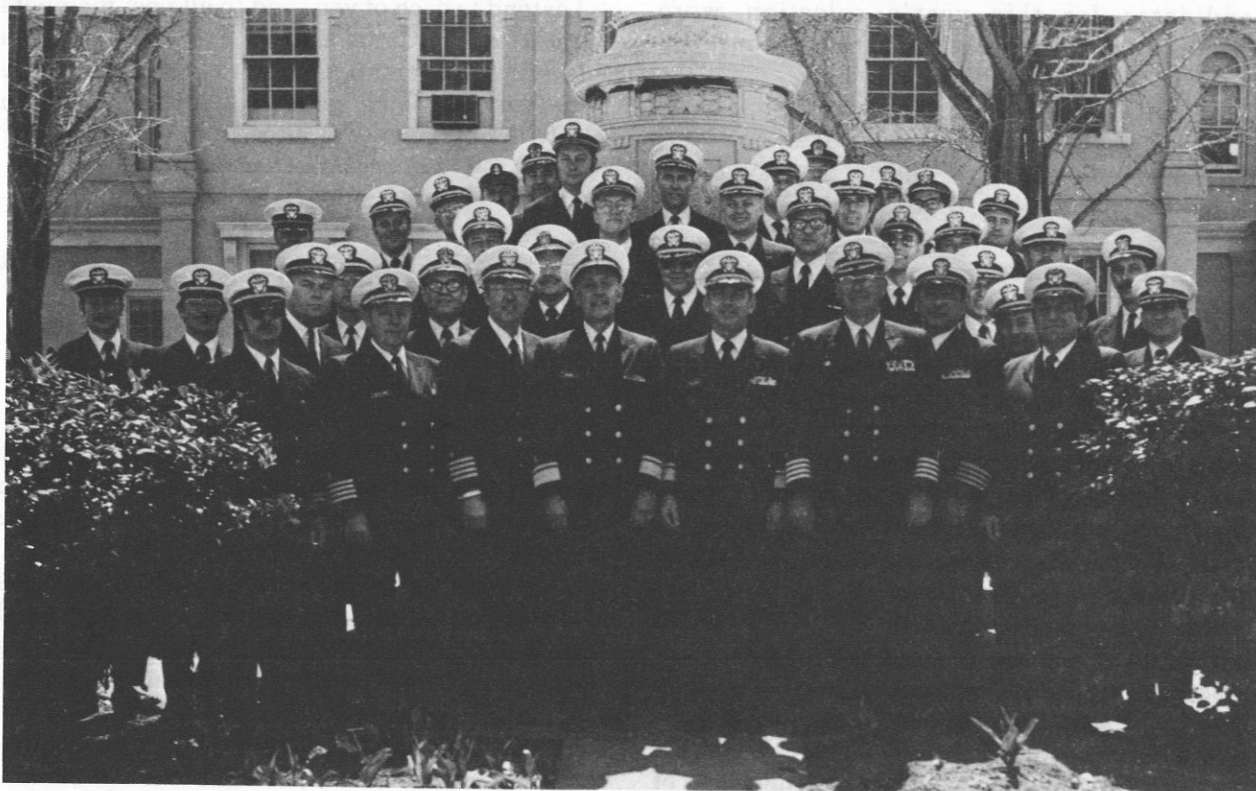
the seminar. A workshop was also conducted on the administration of Naval Reserve personnel on inactive duty.—BUMED Code 6.☛

## SEVEN NEW NAVAL REGIONAL DENTAL CENTERS ESTABLISHED

With the issuance of OPNAV Notice 5450 on 16 April 1975, seven additional naval dental regions were activated effective 1 April 1975. This action completed Phase II of naval dental regionalization, which now includes 19 regions under the command of dental officers and management control of the Bureau of Medicine and Surgery.

Dental regionalization provides the structure to coordinate the oral health care delivery efforts of previously separate dental facilities in a geographical area. Administrative and logistical tasks are centralized, providing more time for patient care at branch activities.

The newest regions include: NAVREGDENTENs Philadelphia, Pensacola, Naples, Bremerton, Jacksonville, Roosevelt Roads, and Subic Bay.—BUMED Code 6.☛



Programs, policies, and trends affecting the Naval Reserve were discussed at the Naval Reserve Dental Seminar held at BUMED in April.

## TWENTY-FIVE SELECTED UNDER MSC INSERVICE PROCUREMENT PROGRAM

Twenty-five Navy enlisted personnel have been selected for appointment as ensigns in the Health Care Administration Section of the Medical Service Corps. The selectees, by precedence, are: HMC William A. Silva, HM1 Michael E. Teague, HMC Napoleon Hodges, HM1 Pat B. Powers, Jr., HMC Alexander D. Eclar, HM1 Stephen P. Vanzee, DTG1 Stanley L. Fish, HM1 Thomas R. McCoy, HMC Emmett Quesenberry, HM1 Neil D. Bacon, HMC Ronald Thibodeau, HMC Charles L. George, HMC Michael Cawley, HMC John A. Hetsko, DTR1 Clarence R. Cline, HMC Lawrence L. Oxford, HM1 Arthur D. Williams, HMC James F. Gollogly, HM1 Walter Stringfield, HM1 Roderick J. Pierce, HM1 Millard J. Driscoll, HM1 John P. Taylor, HMCS Richard Blanchette, HMC Richard L. Mallea, and HM1 Russell L. Cain.

These men were selected under the Medical Service Corps Inservice Procurement Program, outlined in BUPERS Instruction 1120.15K, which provides a path of advancement to commissioned officer status for senior Regular Navy hospital corpsmen and dental technicians. Eligible candidates for this year's selection were considered by a naval examining board convened by the Chief of Naval Personnel.

The exact date of appointment to commissioned status will be determined at a later date; however, there is good reason to believe it may be in September or October of this year.—BUMED, Code 7. ☸

## HOSPITAL CORPS IS 77

*The Hospital Corps observes its 77th Anniversary on 17 June 1975. HMCM Horace S. Anderson, Master Chief Petty Officer of the Medical Department, has taken this opportunity to address the more than 23,000 men and women who serve the nation as Navy hospital corpsmen:*

As plans and preparations are being made throughout the world to observe the 77th Anniversary of the Navy Hospital Corps, each of us should take a few moments to reflect on what we are really celebrating. It's a birthday celebration, true. But more than that, it's a commemoration of a long and proud heritage earned, protected, and preserved by hundreds of thousands of hospital

corpsmen before us, many of whom have given their own lives to preserve the lives of others.

I am not a sentimentalist, nor do I believe in living in the past; but I do believe in honor and respect. I believe that we must honor and respect those hospital corpsmen whose unselfish giving of themselves has made our Hospital Corps a proud and honored organization.

The pride and honor of the Hospital Corps has not been easily won, and will not be easily maintained. I personally believe—as do many of you—that no sacrifice is too great to carry on this noble tradition.

If the future of the Hospital Corps is to be as exemplary as its past, we must develop in our members outstanding qualities of leadership. Senior petty officers and counselors must themselves display, and must demand of their peers and juniors, the type of leadership that inspires high achievement, and that revitalizes and reaffirms the Hospital Corps in its mission.

Over the years our methods may have changed, but our goal has stayed the same: to be second to none in serving those who seek our care. I am confident that this goal will continue to be met, and that our heritage will continue to grow.

I extend to each of you, and to all past members of the Hospital Corps as well, my best wishes on this 77th Anniversary. Enjoy to the fullest those festivities in which you participate, and plan wisely to observe many future anniversaries.

Horace S. Anderson  
Master Chief Petty Officer  
of the Medical Department

## BEQ NAMED FOR HM2 DAVID RAY

Bachelor enlisted quarters at NRMC Camp Pendleton, California, were named last year in honor of the late Medal of Honor winner, HM2 David R. Ray, USN.

Dedicated 22 June 1974, Ray Hall provides living quarters for 174 male and 36 female enlisted personnel. Twelve separate motel-like modules (four on each of three levels) contain six rooms clustered about a lounge and toilet facilities. Each room provides modern, comfortable accommodations for three men or three women.

The building is the initial structure of a modernization program under way at Camp





Bachelor enlisted quarters at NRMC Camp Pendleton, California, have been named in honor of the late Medal of Honor winner, HM2 David R. Ray, USN.

Pendleton. Construction cost \$1 million, with an additional \$250,000 spent for initial furnishings.

Ray Hall honors the memory of a gallant corpsman killed in action in Vietnam while attempting to protect a wounded Marine. A native of McMinnville, Tennessee, HM2 Ray attended Hospital Corps School in San Diego, and had tours of duty at Naval Hospital Long Beach, and in the USS *Haven*. After completion of training at the Field Medical Service School, Camp Pendleton, he was sent to Vietnam to serve with the 2nd Battalion, 11th Marine Regiment, 1st Marine Division. On 19 March 1969, Petty Officer Ray was mortally wounded when his unit came under enemy attack at Phu Loc 6, near An Hoa, Quang Nam Province. After many selfless acts of gallantry and intrepidity, his final act of heroism was to protect the patient he was treating; when an enemy grenade exploded nearby, HM2 Ray threw himself upon the wounded Marine, saving the man's life. For his action, he was awarded the Medal of Honor.

Addressing HM2 Ray's parents, the staff of the medical center, and many dignitaries and guests present at the dedication ceremonies, CAPT E.D. Lowecey (MC), commanding officer of NRMC Camp Pendleton, said:

"In our commemoration of David Ray and our all too brief recognition of the contributions of

Hospital Corps men and women in past years, we should not lose sight of our corpsmen and women of today and in the future. Truly never has there been a greater opportunity for Hospital Corps personnel to serve with honor, to strive for increased responsibility and authority, and to achieve full recognition for their accomplishments. . . . In an era that promises austere medical officer staffing, Hospital Corps men and women have horizons unlimited for the future."

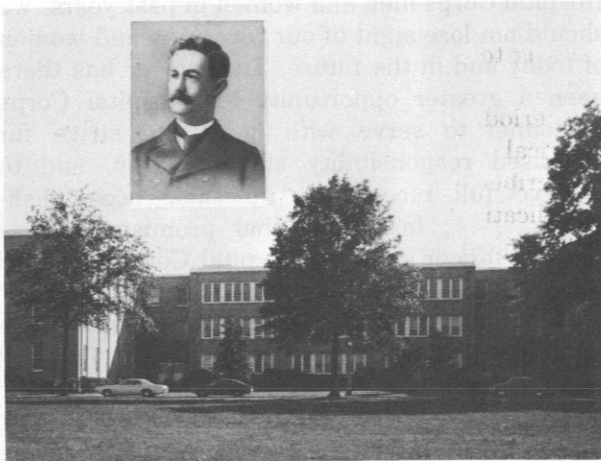
Music for the ceremonies was provided by the Drum and Bugle Corps from the Naval Training Center, San Diego. HM2 Ray had been a member of this group during his recruit training. The Color Guard was provided by his former Marine unit.—PAO, NRMC Camp Pendleton, California.

### EDWARD MAY HALL HONORS HOSPITAL CORPS PIONEER

The Edward May Hall, dedicated on 15 August 1974 at NRMC Portsmouth, Virginia, provides classrooms and bachelor enlisted quarters for personnel assigned to the medical center's Enlisted Training School. The building was named in honor of the late Pharmacist Edward May, a pioneer in the field of Hospital Corps training.

A native of Melbourne, Australia, Pharmacist May enlisted in the U.S. Navy as an apothecary in the USS *Monterey* on 3 May 1893. After several tours of sea duty, he joined the staff of the first Hospital Corps School, established at the Norfolk Naval Hospital on 2 September 1902. Some 350 future hospital corpsmen in the School's first nine classes benefited from his counsel and instruction. Ten days before the ninth class was to have graduated, Pharmacist May was stricken with typhoid fever. He died in Norfolk Naval Hospital on 28 October 1905, and was interred in the hospital cemetery two days later.

In his forwarding endorsement to the request that the hall be named in honor of Pharmacist May, VADM Donald L. Custis, Navy Surgeon General, said, "No finer effort toward perpetuating the memory of Edward May can be made than the naming of building 104, School and Bachelor Enlisted Quarters, after [him] as a tribute to his untiring devotion to duty, to the Hospital Corps, and to the U.S. Navy."—PAO, NAVREGMEDCEN Portsmouth, Va.



Edward May Hall contains classrooms and bachelor enlisted quarters for personnel of the Enlisted Training School, NRMCMC Portsmouth, Va. The hall was named in honor of Pharmacist Edward May (see insert), who instructed the first nine Hospital Corps School classes. 🍀

## MEN'S UNIFORM CHANGES

### TAKE EFFECT JULY 1

Chief of Naval Operations ADM James L. Holloway III recently approved a number of changes to both the officer and enlisted uniforms for men. The new regulations designate the coat and tie style service dress blue uniform as the basic all-year-round uniform.

A short-sleeve convertible collar shirt will replace the present long-sleeve dress and tropical white shirts, although wearing the long-sleeve white shirt with service dress blue remains optional.

The winter working blue uniform will be required for all officers and enlisted men. This uniform consists of the long-sleeve blue shirt, service dress blue trousers, black belt, shoes, socks, and combination cap. During Fiscal Year 1976, recruits will begin receiving this uniform.

Another change deletes tropical khaki long as a dress uniform for all officers and chief petty officers beginning 1 July. However, the khaki uniform, consisting of short-sleeve shirt, trousers, belt, combination cap, and fore-and-aft cap, will be retained only as a working uniform. Both this and the winter working blue may be worn only

with breast insignia or badges; ribbons are not authorized.

Black shoes may now be worn with working khaki. Brown shoes will not be authorized after 1 July 1976.

In more changes, ADM Holloway is retaining the full dress white uniform for all officers. Enlisted members will wear tropical white long at ceremonies requiring the wearing of full dress white uniform by officers. The service dress white uniform for officers is no longer prescribed.

The most far-reaching change is approval of a summer blue uniform for enlisted members. Authorized for 1 July, this uniform consists of the tropical white shirt, ribbons and breast insignia, combination cap, service dress blue trousers, black belt, shoes, and socks. It will be worn with rating badges for E-1s through E-6s, with collar devices for CPOs.

In other developments, a flare-legged dungaree trouser and chambray shirt combination will be introduced to replace the present working blue uniform for enlisted men, and a new lightweight blue coverall was approved for use in surface ships.—NAVNEWS, 9 May 1975. 🍀

## ERRATA

### AMERICAN BOARD CERTIFICATIONS

Our last report of American Board Certifications (US NAV MED 65[4]:29, Apr 1975) contained a few errors.

CAPT Bennett L. Johnson, Jr., MC, USN and CDR Walter T. Johnson, MC, USN were listed as certified by the American Board of Dermatology. In fact, the two officers received such certification some time ago. More recently they attained Diplomate status from the American Board of Dermatology in the subspecialty of dermatopathology.

CDR Gale W. Bach, MC, USNR was listed as certified by the American Board of Clinical Psychology. The proper terminology is: *Diplomate in clinical psychology of the American Board of Professional Psychology*. CDR Bach is one of only two Navy psychologists to achieve this status.

Our thanks to the careful readers who brought these errors to our attention. 🍀

## OFFICIAL INSTRUCTIONS AND DIRECTIVES

BUMEDINST 6320.4W of 13 Jan 1975

*Subj: Medical care, subsistence rates, and hospitalization bills; cost elements of*

Charges shall be collected locally for meals taken in the hospital mess, and for care provided certain categories of patients. Rates of such charges are included in this instruction.

When specifically requested, and subject to certain restrictions, cost elements of hospitalization bills may be furnished insurance carriers in accordance with the rates of Table D of this instruction. Patients or sponsors may be provided assistance in completing hospitalization or insurance forms.

Billings shall be addressed to the patient or sponsor who is primarily liable for charges. Payment may also be accepted from insurance companies for credit to the patient's account.

BUMEDINST 6000.4B of 15 Jan 1975

*Subj: Clinical Investigation Program*

The Clinical Investigation Program (CIP) is established in the Naval Health Sciences Education and Training Command (HSETC), with a director and staff responsible for overall management. Regional clinical investigation centers manage and direct programs at NRMCS Bethesda, Oakland, Philadelphia, San Diego, and Portsmouth, Va. At each of these medical centers, a Regional Clinical Investigation Review Committee (RCIRC) reviews study proposals submitted within its area of responsibility.

All Medical Department activities shall submit proposed clinical investigation studies to HSETC (Attn: DCI) via the appropriate RCIRC in accordance with the requirements set forth in this instruction and its enclosures.

Under the commanding officer of HSETC, the director of clinical investigation approves allocation of resources to the clinical investigation centers, whereupon these funds are provided as an addition to the expense operating budget of the respective NRMCS. Requests for changes or deletions of approved investment equipment shall be submitted to HSETC. HSETC is also to be notified when investment equipment is received,

and is to be informed of the actual procurement cost.

Periodic and situational reporting of approved clinical investigation studies is required, as described in this instruction. Presentations or publications resulting from CIP studies shall carry the clinical investigation number of the study, and identify the Navy Medical Department as the study sponsor.

BUMEDNOTE 1610 of 22 Jan 1975

*Subj: Remunerative professional civilian employment of Medical Department officers*

Medical Department officers who wish to practice medicine in civilian communities must submit their request to their commanding officer with the following documentation: (1) a description of the type of outside employment proposed; (2) a statement from a local medical or dental association indicating there is a need for the officer's services.

If outside employment is approved, the following guidelines apply:

- Except in special circumstances, the officer may not spend more than 16 hours a week in outside employment.
- Outside employment may not interfere or be in competition with local civilian health care practitioners, and must be carried out in compliance with all applicable licensing requirements.
- Officers may not assume primary responsibility for the care of any critically ill person on a continuing basis.
- Outside employment cannot be conducted on military installations, and government equipment, supplies, and personnel may not be used in such work.
- There may be no self-referral from the military setting to outside employment. Neither may officers solicit or accept a fee for the care of active-duty patients, retirees, and dependents.
- Annual leave must be taken to fulfill obligations arising from outside employment, such as appearances in court or testimony before compensation boards.
- Medical Department trainees are prohibited from seeking after-hours employment. All other



Medical Department officers are discouraged from off-duty employment.

These guidelines do not apply to the provision of emergency medical assistance in isolated cases, or to unpaid service such as volunteer work with local drug abuse programs, family planning centers, etc.

Primary responsibility for the control of remunerative professional civilian employment by Medical Department officers rests with the local command. Requests for approval of such off-duty employment must be renewed every six months. Quarterly reports of off-duty employment shall be submitted to BUMED; the assigned symbol of these reports is MED 1610-1.

BUMEDINST 6320.11C of 7 Feb 1975

*Subj: Transfer of patients of the naval service to Veterans Administration treatment facilities*

Under procedures outlined in this instruction, naval personnel who are hospitalized in uniformed services facilities and who are not expected to return to duty may be transferred to Veterans Administration (VA) treatment facilities provided: (1) that the member accepts the recommended findings of the Central Physical Evaluation Board; (2) that when the member requires further hospitalization for an EPTE, nonaggravated condition, he signs a NAVMED 6100/3; and (3) that the member's subsequent discharge from the naval service will be under conditions other than dishonorable. Additionally, this instruction amplifies the provisions of the Veterans Health Care Expansion Act of 1973 (PL 93-82) whereby in certain cases an active-duty patient may be placed directly from an Armed Forces medical treatment facility into a non-VA nursing home at VA expense.

Members with severe spinal cord damage should be transferred as soon as medically feasible to VA Spinal Cord Injury Centers. Transfer of these patients need not be delayed awaiting PEB findings, in order that psychological as well as sociological rehabilitation can begin as soon after the injury as possible.

Liaison with VA treatment facilities shall be maintained to insure all changes in the patient's status or physical condition are reported to the next of kin or the Department of the Navy. Active

duty patients in VA facilities will be carried on the sick list of the activity which has been assigned administrative responsibility; this activity will maintain the patient's records, and submit all required reports.

BUMEDINST 6760.2 of 12 Feb 1975

*Subj: Federal performance standards for diagnostic X-ray systems*

All dental X-ray equipment and components manufactured on or after 1 August 1974 must comply with revised Federal performance standards for diagnostic X-ray systems.

No modifications are required on equipment manufactured prior to this date. Navy/Marine Corps dental facilities may release such equipment to other agencies, without modifications, until 1 August 1979. Thereafter, equipment must be updated to comply with revised standards before it may be given to a non-Navy claimant. However, equipment may be moved to new Navy locations without modification.

All equipment newly installed after 1 August 1979 must comply with the revised standards.

Components manufactured prior to 1 August 1974 may be used to repair existing equipment. However, once a certified component is used to repair or alter the equipment, certified components must also be used for all subsequent repairs.

Anyone who assembles or installs a diagnostic X-ray system using certified components must comply with the record-keeping procedures required of manufacturers.

Each Navy/Marine Corps dental facility shall keep records of the date that diagnostic dental X-ray units and spare parts are purchased, and of the maintenance performed. BUMED-managed activities shall project requirements for certified diagnostic dental X-ray units; facilities not under BUMED management shall alert their command of potential additional funding necessary to meet standards.

The number of X-ray units which totally conform to revised standards, as well as a list of modifications which have been made to nonstandard units, shall be included in the "Remarks and Recommendations" section of DD-477-1, Dental Service Report (MED 6750-1).

Questions may be directed to BUMED Code 612.

BUMEDINST 5100.9 of 13 Feb 1975

*Subj: Safety and occupational health deficiencies; correction of*

To insure that Medical Department facilities and activities comply with the safety standards of the Occupational Safety and Health Act of 1970 and the Joint Commission on Accreditation of Hospitals, commanding officers shall:

- Have all activity spaces and areas surveyed to identify safety and occupational health deficiencies.
- Task a safety committee to identify, record, and recommend correction of such deficiencies.
- Correct substandard conditions as resources become available.
- Insure identification of and budgeting for resources required to correct deficiencies.
- Insure that new environments, procedures, and practices comply with applicable safety and occupational health standards.

If required technical safety services are not obtainable, specific safety services may be requested from BUMED Code 563.

BUMEDINST 5450.116 of 26 Feb 1975

*Subj: Industrial hygiene responsibilities of the Medical Department*

Commands must take aggressive action to identify, evaluate, and control environmental stresses arising from the workplace which may adversely affect naval personnel both at work and in the surrounding community. Industrial hygiene personnel and services are available to commands through regional medical centers and clinics, the Navy Environmental Health Center, or Navy environmental and preventive medicine units.

BUMED will develop professional standards, and administer the Navywide industrial hygiene program. This includes providing technical guidance to field activities and other components of the Navy Department, evaluating the effectiveness of programs and new materials, identifying research requirements, insuring that training is available in industrial hygiene, and coordinating Navy program efforts with those of other government agencies.

The Naval Medical Research and Development Command will plan, develop, monitor, and sup-

port occupational health R&D efforts; this includes conducting epidemiological surveys, determining human exposure limits, and developing effective protective measures.

Regional medical centers and clinics will manage industrial hygiene programs for all naval commands within their medical region. This includes identifying and evaluating hazardous conditions, reviewing plans for construction of new facilities or additions to existing facilities, and providing industrial hygiene laboratory and radiation health surveillance services as necessary. At least every two years, a comprehensive industrial hygiene survey will be conducted of each activity within the medical region.

The Navy Environmental Health Center will conduct professional training programs and orientation courses in industrial hygiene, provide technical assistance to naval activities as required, and study the occupational environment to help establish health standards. In addition, a variety of support and consultation services will be provided on request.

BUMEDINST 6700.36 of 26 Feb 1975

*Subj: Medical Equipment Maintenance and Repair Manual*

This instruction promulgates guidance for the administration and operation of Navy regional medical equipment maintenance and repair facilities. To insure that medical equipment is always capable of providing full support to the shore establishment and the operating forces, the provisions of the Navy Medical Equipment Maintenance and Repair Program, as set forth in this manual, shall be implemented as quickly as possible.

BUMEDNOTE 6240 of 26 Feb 1975

*Subj: Naval Environmental Protection Support Service*

The Naval Environmental Protection Support Service provides all commands with data necessary to carry out environmental protection responsibilities. An informative pamphlet, "The Naval Environmental Protection Support Service in Action," may be obtained from: CO (Code 25),

Naval Construction Battalion Center, Port Hueneme, Calif. 93043.

BUMEDINST 1500.7D of 27 Feb 1975

*Subj: Part-time outservice training, administration of*

Provided funds are available, Medical Department personnel may obtain partial sponsorship for part-time, outservice training in accredited civilian institutions in the physical, chemical, clinical, biological, and sociopsychological sciences, and in Medical Department administration. Required courses in a fully planned program leading to a degree or certificate that will enable the applicant to fulfill more effectively the needs of the Medical Department may also be approved. Hospital Corps personnel and dental technicians initially entering such training may be considered for courses outside their present areas of responsibility if such training relates to anticipated responsibilities.

Only active-duty members of the Medical Department (Regular Navy or the Naval Reserve) are eligible to participate. Officers must agree to serve two years following completion of training; enlisted personnel must usually have at least one year of obligated service remaining after training.

After applicants determine their eligibility for acceptance at the desired educational institution and the availability of the desired courses, requests for partial sponsorship should be submitted via their CO to the Naval Health Sciences Education and Training Command.

HSETC will approve 75% of the total cost of textbooks, tuition, and fees for up to two courses per semester, totaling not more than 8 semester hours.

Individuals who withdraw from sponsored courses for reasons other than those beyond their control will be required to pay back the funds expended by the Navy.

Officers shall forward a record of each scholastic achievement to CNP (PERS-3613) with a copy to HSETC. Enlisted personnel shall forward one copy of each scholastic achievement to HSETC; completion of each course of instruction shall be recorded in the enlisted service record and in the next regular performance evaluation.

BUMEDNOTE 6120 of 6 Mar 1975

*Subj: Dental examination of U.S. Naval Academy applicants*

Students have reported to the Naval Academy on induction day with defects related to dental occlusion that were not adequately noted on the SF88 when admission physical examinations were performed. Dental examiners must study and comply with all applicable portions of BUMED-INST 6120.3L, and must appropriately record any existing dental defects. Occlusal relationships must be closely evaluated for anterior open bite with no incisal overlap, anterior overbite with overlap of more than half of the lower incisors, cuspid or incisor crossbite, overjet of more than 4mm of central incisors, posterior open bite, posterior crossbite, and other unusual occlusal discrepancies.

Diagnostic casts of questionable candidates will be forwarded with the examination report to: DOD Medical Review Board, Box 3000, US Academy, Colo. 80840.

BUMEDNOTE 6000 of 12 Mar 1975

*Subj: Medical and dental support to the Operating Forces of the Navy and Marine Corps*

A Fleet Liaison Office will be established in all naval hospitals and regional medical and dental centers to help Medical Department personnel in fleet units obtain consultations and professional guidance, evaluate complaints, and resolve poor communications.

One medical and one dental officer will be specifically designated Fleet Liaison Officers. A Medical Service Corps officer and an experienced independent duty hospital corpsman or senior dental technician will also serve as liaison with shipboard medical and dental department personnel.

Naval hospitals and regional medical and dental centers will also:

- Establish liaison with appropriate Navy environmental and preventive medicine units, via the regional preventive medicine service, to assure prompt delivery of preventive health services. Reports of services rendered are required.



- Coordinate fleet support activity with appropriate fleet Medical Department officers.
- Issue a quarterly report of staffing, location, and telephone numbers of the Fleet Liaison Office.

BUMEDNOTE 6120 of 13 Mar 1975

*Subj: NROTC midshipmen physical examinations*

Coordinated and cooperative effort is necessary to insure that participants in the NROTC College Program receive required physical examinations at the times set forth in MANMED Chap 15, and NAVMED P-5055 (Radiation Health Protection Manual). All positive answers and defects noted must be properly recorded, evaluated, and elaborated upon. When considered appropriate, examining physicians may recommend waiver of physical standards.

Special attention must be given to recording full information on individuals whose unaided visual acuity is less than 100% BVE. Since valuable time is lost and inconvenience incurred when incomplete or inadequate reports must be returned for completion, findings must be recorded in a manner that will permit BUMED reviewers to make a determination without having to request additional information.

COs of NROTC units will insure that first-class midshipmen's summer training orders reflect the type of physical examination required. Applicants who wear glasses should be told to bring a copy of their civilian lens prescription when reporting for physical examination.

The orders of midshipmen reporting for summer training should be screened to ascertain whether a physical examination is required and arrangements made for such examinations. Navy medical facilities should insure that examinations are scheduled and conducted expeditiously, and are completed in one visit whenever possible.

BUMEDINST 3402.1B of 2 Apr 1975

*Subj: Biological warfare defense; duties of Medical Department personnel in event of*

A well executed biological warfare (BW) attack may not be recognized when it occurs, and the resultant disease may initially be indistinguishable from a natural epidemic.

Medical Department personnel shall immediately inform the medical officer or next higher medical echelon of the possibility of a BW attack having occurred when (1) enemy action is detected which logically indicates such an attack has been carried out; (2) a high percentage of a crew is incapacitated by illness, with the functional capability of the unit being jeopardized; and (3) an exotic disease pattern occurs which is substantially severe or extensive.

Material from the suspected attack shall be sent for analysis to a level III laboratory, together with full clinical and epidemiological information. Samples shall be marked for expeditious and special handling, and shall conform to the collection procedures set forth in the enclosure to this instruction.

Report of findings shall be immediately forwarded to the agency originating the request, and to the Surgeon General of the service involved. When telegraphic notification of agencies is required to advise that certain infections and communicable diseases have been diagnosed, CINCNORAD (NCOC) shall be included as an information addressee. All reports concerning a suspected BW attack shall be classified as confidential or higher.

Medical therapy shall be administered to affected personnel. Medical officers shall also decide when decontamination is required, and it shall be done under their supervision. Information regarding this area may be obtained from BUMED Code 5, or through attending Navy courses.

BUMEDNOTE 1520 of 9 Apr 1975

*Subj: FY 1977 residency/fellowship training programs; announcement of*

During FY 1977, training in 35 medical specialties and subspecialties will be offered at various naval medical facilities (see page 42). Certain training is also available in civilian institutions.

Interested Medical Corps officers should submit their application before 15 August 1975 to: CO, Naval Health Sciences Education and Training Command (Code 4), National Naval Medical Center, Bethesda, Md. 20014.

Applicants will be notified in October of the action taken on their requests.

RESIDENCIES/FELLOWSHIPS IN NAVAL ACTIVITIES INDICATING POSITIONS  
AT EACH YEAR LEVEL BY ACTIVITY

	years of training offered	Number of positions each year	Bethesda	Camp Pendleton	Charleston	Jacksonville	Oakland	Pensacola	Philadelphia	Portsmouth, Va.	San Diego	Other
Aerospace Medicine	3 **	6						6				
Anesthesiology	3	21	4				4		3	4	6	
Anesthesiology Research	2	1	1									
Dermatology	3 **	9	2						3		4	
Family Practice	3	33		9	9	9		6				
Hand Surgery	1	1									1	
Internal Medicine and Subspecialties	3 **	36	6				4		6	8	12*	
Cardiovascular Disease	2	5	2						1		2	
Clinical Immunology & Allergy	2	1	1									
Endocrinology & Metabolism	2	2	1				1					
Gastroenterology	2	4	1						2		1	
Hematology/Oncology	2	6	1						1/1		3	
Nephrology	2	1								1		
Pulmonary Disease	2	4	1							1	2	
Neurology	3 **	3	3									
Nuclear Medicine	2	3	2				1					
Obstetrics & Gynecology	4	18	3				3		2	6	4	
Gynecologic/Endocrinology	2	1					1					
Maternal & Fetal Medicine	2	1	1									
Occupational Medicine	3 **	1										1
Ophthalmology	3 **	10	3				2		2		3	
Orthopedic Surgery	4 **	14	2				3		2	3	4	
Otolaryngology	4 **	10	2				3		2		3	
Pathology	4	10	3				2			2	3	
Pediatrics	3	18	3				3		2	5	5	
Plastic Surgery	2	1	1									
Preventive Medicine (General)	3 **	1										1
Psychiatry	3 **	11	4				3		4			
Radiology	3 **	17	4				3		3		7	
Surgery	4 **	12	2				2		2	3	3	
Peripheral Vascular Surgery	1	1									1	
Surgical Research	2	1	1									
Thoracic & CV Surgery	2	2	1								1	
Urology	4	7	1				1		1	2	2	
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\* This is a three year program.

\*\* Indicates number of years training beyond GME year level one.

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### CORPSMEN EARN WINGS

Three Navy hospital corpsmen assigned to the Naval Air Facility, Naples, Italy, received their medical flight attendant aircrewmen wings in February after extensive flight training. The new medical flight attendants are (left to right): HM2 Charlie Doss, HMC Robert Scholes, and HMC Robert Edstrom. The corpsmen will participate in search and rescue and mercy mission flights conducted in the HH-46 helicopter, and will be on call for medical evacuation flights.

HM2 Doss received his wings on 7 February 1975, after 13 months of training. HMC Scholes and HMC Edstrom received their wings on 3 February, after 20 and 30 months of training respectively. (Photo by JOSA T. Chambers.)



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